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American Foundryman

A PUBLICATION PRESENTING THE PROGRESS OF THE AMERICAN FOUNDRYMEN'S ASSOCIATION

September
1943

Pride of Craft Essential to Progress of Foundry Industry

WAR efforts, such as the one in which we are now engaged, bring to the attention of the world the value and importance of certain industries heretofore unnoticed and unknown to most of our people. Particularly is this true of the Foundry Industry, which is indeed making a great contribution to the national war effort for which it now is receiving generous praise from high ranking officials.

This recognition as an industry is very largely due to the fortunate fact that we have had in this industry for many years a well-established technical society, the American Foundrymen's Association, wherein men from foundries large and small, in a cooperative and well-planned program, are constantly discussing, studying, and experimenting to the end that methods may be improved and that every foundry in America may have the benefit of their research.

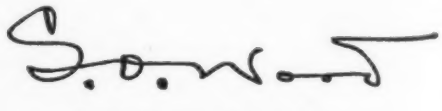
These men, who are giving so generously of their time and ability, are doing so in many cases at great personal sacrifice. They are doing so because they believe in this industry; it has become to them not only a vocation but a beloved hobby as well and they are happy in the thought of passing on their information and experience in the hope that their hobby may be improved and that their vocation be recognized as a *Scientific* business.

This castings industry is an industry of which we may well be proud. It is a basic industry whose history runs back through the centuries and whose struggle for improvement of production becomes a Romance to anyone engaged therein who will but read its history.

It is basic because behind almost every modern human industrial and professional activity stands this industry of ours. It is difficult indeed to find any branch of industry or profession which can rightfully claim that it is in no way dependent upon our industry.

With this background and a realization of the sincerity of purpose of the men leading the industry, we are indeed proud to be a part of it. Once a foundryman gets a full realization of its possibilities, he is filled with enthusiasm and even love for his "craft." Unless we truly feel this enthusiasm for our "craft," we become merely workers of the hand and back and not "Builders of a Cathedral."

Earnest purpose and a "Pride of Craft" will make us builders rather than toilers for pay, and progress in our Art shall become our reward.



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SHELDON V. WOOD, since 1913 Manager and President, Minneapolis Electric Steel Castings Co., Minneapolis, Minn., was elected a Director of A.F.A. in 1942. He also serves on the Steel Division Advisory Committee and was active in organizing the Twin City Chapter. A graduate of the University of Minnesota, he still is active in university affairs, and is a member of A.F.A., A.I.M.E., A.S.M., Steel Founders Society of America, and the Minneapolis Engineers Society.

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CONTENTS

SEPTEMBER, 1943
VOL. 5 — NO. 9

	Page
Pride of Craft Essential to Progress of Foundry Industry, *by S. V. Wood*	Inside Front Cover
Steel Division Committee on Magnetic Tests Reports Results from Questionnaire	2
A.F.A. National Committee Personnel—1943-44	4
Some Fundamental Steps for Supervisors in Getting Along with Their Men, *by Stephen Garry*	13
Illinois Institute of Technology Course in Cast Iron Metallurgy	18
Similar British and American Secondary Aluminum Alloys are Compared	19
Improves Castings Through Use of A.F.A. Standard Pattern Colors, *by Roy M. Kinder*	21
New Association Members	22
Urges Conservation of Foundry Safety Shoes	23
New Chapter Officers and Directors	24
A.F.A. Chapter Directory—1943-44	25
Aids Argentina to Set Cast Steel Standards	28
A.F.A. Chapter Activities	29
Texas to Hold First Meeting October 29	29
Abstracts of Current Foundry Literature	31
September Chapter Meeting Schedule	33

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The first report of the A.F.A. Steel Division's Committee on Magnetic Powder Testing was published in the October 1942 "American Foundryman," outlining fundamental principles and definitions of the procedures. The following report compiles the reaction of the industry to the magnetic powder test, obtained by the committee through questionnaire. Recently this committee was combined with the Committee on Radiography to form the new Committee on Non-Destructive Testing, with C. W. Briggs, Steel Founders Society of America, Cleveland, as Chairman.

Steel Division Committee on Magnetic Tests Reports Results from Questionnaire

YOUR Committee on Magnetic Power Tests has attempted to determine the reaction of the industry to this method of testing by circulating a questionnaire containing eight major questions. Sixty-seven replies were received.

The questions contained in the questionnaire, and the replies received and conclusions which may be drawn, are given below.

Question 1—Will you accept orders which state that acceptance of the castings will depend upon the results of a magnetic powder tests?

Thirty-eight (38) plants, or 57 per cent of those replying stated that they will accept orders requiring magnetic inspection. The remaining twenty-nine (29) will not accept such orders.

Several of the answers were qualified, in that only orders for certain designs will be considered. Only one of these qualified acceptances was specific. In this case orders will be accepted only "if the term magnetic quality is defined in the specification. Weak adherence of powder, indicating shallow, skin deep defects (inclusions, mechanical dentures, internal strains) not deeper than 1/32 inch in machined surfaces or 1/16 inch deep in rough surfaces is interpreted as not impairing quality."

Question 2—Do you have equipment available which is suitable for making magnetic powder tests?

Thirty-one (31), or 46 per cent, of the replies stated that this equipment is available. Subordinate questions disclosed the information that twenty-eight (28) of these 31 plants use the direct current method of magnetization. Several companies use more than one magnetizing method, so that equipment is available for the solenoid method in thirteen (13) instances and the magnetic yoke is available in five (5) instances.

The currents employed in the foundries with the various magnetizing methods vary considerably. The users of the direct current method reported amperages as low as 200 and as high as 6000. The average range of the majority of the users of this method is 400 to 600 amperes.

The users of the solenoid method reported amperages as low as 10 and as high as 4000. The average range in this case is 300 to 700 amperes.

The users of the magnetic yoke reported amperages as low as 5 and as high as 4000, with an average range of 400 to 600 amperes.

The dry powder method is preferred since 30 of the 31 foundries that have magnetic testing equipment use this method. One foundry uses only the wet method and five (5) foundries use both the wet and dry methods.

Question 3—Have your customers used magnetic powder tests on your castings?

Thirty-two (32) foundries, or 46 per cent of the companies replying have had customers use magnetic tests on their castings.

Subordinate questions disclosed that twelve (12) of these companies did not know the testing method which had been used. In those cases where the methods were known, the data were as follows:

Direct Current	
Dry powder	19 cases
Wet method	5 cases
Avge. amperage	300 to 500 amps.
Solenoid Method	
Dry powder	4 cases
Wet method	4 cases
Avge. amperage	400 to 600 amps.
Magnetic Yoke	
Dry Powder	0
Wet method	1 case
Amperage	350 to 450 amps

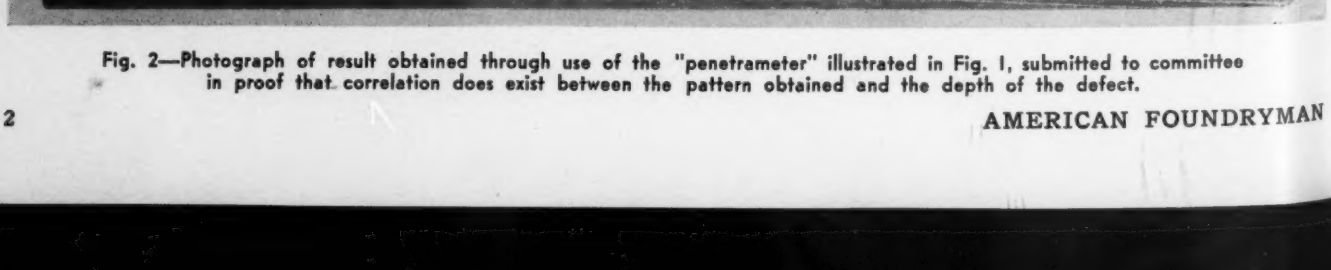

Fig. 2—Photograph of result obtained through use of the "penetrameter" illustrated in Fig. 1, submitted to committee in proof that correlation does exist between the pattern obtained and the depth of the defect.

The direct current method again is shown to be the most popular method of magnetic testing. This method, with either the dry powder or the liquid suspension, was used in twenty-four (24), or 73 per cent, of the cases reported. The direct current method with only the dry powder was used in nineteen (19), or 57 per cent, of the cases reported.

The answers to these first three questions may also be used to compare the experience with magnetic testing of those foundries which will or will not accept orders where magnetic testing is specified. This tabulation is given below.

	Will Accept Orders (38)	*Will Not Accept Orders (29)*
No experience	1	21
Own tests	29	4
Customer's tests	27	7
Both own and company tests	18	5
Percentage with experience	97.5	27.5

The remaining questions deal with the application of magnetic inspection in production. In many cases only a few of these questions were answered. In other cases the answers were qualified in such a manner that it was impossible to tabulate them.

Question 4—Do you or your customers use magnetic powder testing as (a) the only non-destructive testing method? (b) a tool for exploring defects originally found by radiography to insure complete removal of defects?

Magnetic tests were reported to be the only non-destructive test in 11 instances. Magnetic tests were reported to be used as an aid to exploring defects found radiographical in 13 instances. Several replies stated that while both magnetic tests and radiography were used on the same casting, there was no attempt to correlate the results or to use one method as an aid to the other.

Question 5—Have you found any correlation between the magnetic powder patterns shown on the surface of rough castings and the depth of the defect?

This appears to be a controversial question, since seventeen (17) replies stated there is such a correlation and eighteen (18) replies stated there is none.

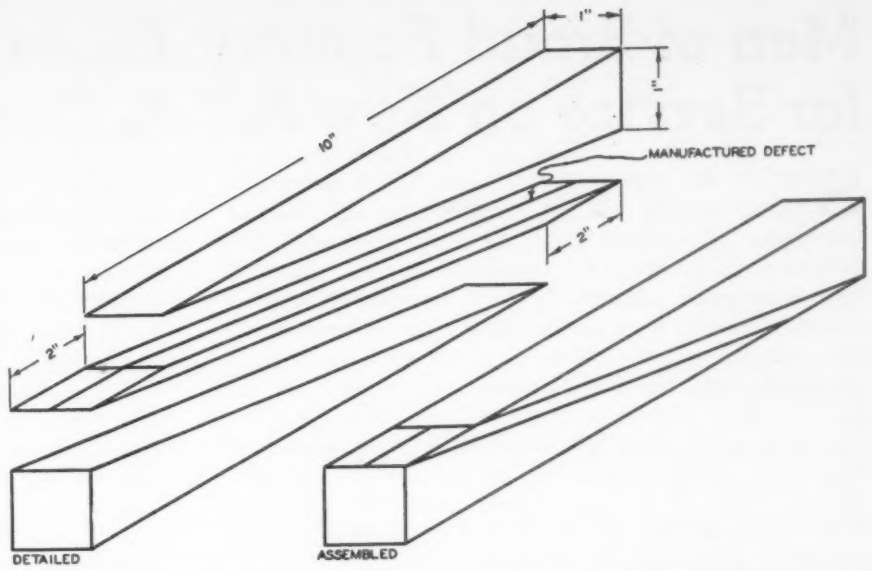

Fig. 1—Sketch of "penetrameter" for magnetic tests, submitted by one firm to show correlation between magnetic powder patterns on the surface of rough castings and the depth of the defect.

One reply to this question included a sketch of a "penetrameter" and a photograph of the result obtained as proof that a correlation does exist between the pattern obtained and the depth of the defect. These exhibits as included in this report are Figs. 1 and 2, respectively.

Question 6—Are you required to explore by chipping or grinding all magnetic powder patterns which indicate defects in rough castings?

In twenty-two (22), or 78 per cent, of the twenty-eight (28) cases reported, all powder patterns which indicate defects must be explored.

Question 7—If the answer to Question 6 is "no," please explain method or standard which is used to eliminate the exploration of some defects.

Several replies to this question were generalizations which took into account the location of the defect, the general appearance of the pattern, etc. Only one reply gave specific information which can be applied by all. At this particular plant, weak indications (thin lines of loosely adherent powder) which can be blown off with a current of air at a pressure of 1 to 1.5 in. of water are disregarded. This plant uses direct current magnetization at 200-300 amperes for most of its work.

Question 8—Has your experience shown that a magnetic indication on a finished casting is always accompanied by a physical defect?

Twenty-four (24), or 77 per cent of the thirty-one (31) replies received stated a defect is not always present even though magnetic indication may be obtained.

General Conclusions

As there are no adequate standards in general use and chipping or grinding is now required for practically all patterns obtained, it appears that this type of inspection causes a great deal of non-essential chipping and welding. In spite of this, most of the people who have had experience with the test will accept orders requiring this method of inspection. Most of those who will not accept orders of this type are those who are not familiar with this method of inspection.

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Men of Broad Foundry Experience Volunteer for Service on New A.F.A. Committees

SINCE the strength of any organization is based largely on the number and the caliber of those who contribute to its activities, the National Committee Personnel of A.F.A. is one of the strongest technical groups the American Foundrymen's Association has ever presented to the industry. The 400 or so men of the Foundry Industry who have volunteered their services to A.F.A. Committees during the year ahead include not only many who have long served the industry but also a large number of names new to committee service. It is upon these men, the younger men now coming up in the industry, that future foundry advancement must depend.

Problems of war production are still with us, in only a few cases curtailing the activities of certain groups. The excellent work in aiding the industry with its wartime difficulties must still be carried on. Already, the work of A.F.A. committeemen has contributed materially to Allied victories that have been headlined only recently in the press.

To the men whose names are shown on the following eight pages, all members of the Foundry Industry owes a unanimous vote of thanks for their spirit of progressiveness and cooperation. These men, giving of their precious time and great experience to A.F.A. Committee work, without remuneration, are indeed doing their part in advancing the great industry they represent.

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For companies and addresses of committee members see section on addresses of Committee Personnel beginning on page 9.

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Addresses of Committee Personnel

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Brooks, W. H., Gen. Foreman, Allis Chalmers Mfg. Co., 1446 N. 40th, Milwaukee, Wis.
Brown, Hiram, Frontier Bronze Corp., Niagara Falls, N. Y.
Brown, L., Plt. Mgr., Magnesium Fabricators Div., Bohn Aluminum & Brass Corp., E. Maumee St., Adrian, Mich.
Buckholtz, Wm., Supt., Belle City Malleable Iron Co., Racine, Wis.
Bureau of Ships, Navy Dept., Washington, D. C.
Burgess, C. O., Met., Engr., Union Carbide & Carbon Research Labs., Inc., 4625 Royal Ave., Niagara Falls, N. Y.
Burke, Edmund J., Fdry. Tech., Hickman Williams & Co., 1203 Ford Bldg., Detroit, Mich.
Busch, A. J., Fdry. Engr., Chas. C. Kawin Co., 431 S. Dearborn St., Chicago, Ill.
Bush, Earl J., Foreman Molder, U. S. Navy Yard, Washington, D. C.

Caine, J. B., Met., Sawbrook Steel Castings Co., Lockland, Cincinnati, O.
Calder, A. W., Jr., Asst. Mgr., New England Butt Co., 304 Pearl St., Providence, R. I.
Campbell, F. D., Fdry. Production Consulting Engr., 8951 Lowe Ave., Chicago, Ill.
Campion, E. W., Pres., Bonney Floyd Co., 611 Marion Rd., Columbus, O.
Carmody, E. J., Met., Chas. C. Kawin Co., 431 S. Dearborn St., Chicago, Ill.
Carter, John L., 30 Central Ave., Newark, N. J.
Carver, W. E., Chief Engr., Monarch Aluminum Mfg. Co., Cleveland.
Casberg, C. H., Prof., Mech. Engrg., University of Illinois, Urbana, Ill.
Caudle, A. E., Sales Engr., Blower and Compressor Dept., Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Cech, Frank C., Pattern Instr., Cleveland Trade School, 535 Eagle Ave., Cleveland, O.
Chappell, S. W., Electric Boat Co., Groton, Conn.
Charlson, H. L., Asst. Wks. Mgr., American Steel Foundries, East Chicago, Ind.
Claffey, B. D., Mgr., Gray Iron and Aluminum Div., General Malleable Corp., Waukesha, Wis.
Clamer, G. H., Pres., Ajax Metal Co., 46 Richmond St., Philadelphia.
Clark, G. E., Met. for Foundry Development, Cummins Engine Co., Columbus, Ind.
Coffman, J. G., Plant Mgr., Los Angeles Steel Casting Co., 2444 S. Alameda St., Los Angeles, Calif.
Cole, H. J., Chemist, General Electric Co., Schenectady, N. Y.
Collier, R. L., Secy., Steel Founders' Society of America, 920 Midland Bldg., Cleveland, O.
Comin, H. L., Gen. Mgr., Indiana Gas & Chemical Corp., 13th & Hulman, Box 268, Terre Haute, Ind.
Comstock, G. F., Met., Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Cone, E. F., Editor, *Metals & Alloys*, 330 W. 42nd St., New York, New York.
Conner, W. G., Jr., Gen. Supt., Walworth Co., Washington Park Works, St. Clair County, Ill.
Cress, Wm. C., Res. Ceramist, Armour Research Foundation, 35 W. 33rd St., Chicago, Ill.
Crosby, E. R., Engr., Smith Facing & Supply Co., 1857 Carter Rd., Cleveland, O.
Crosby, V. A., Climax Molybdenum Co., 14410 Woodrow Wilson Ave., Detroit, Mich.
Crown, J. E., Master Mechanic, U. S. Navy Yard, Washington, D. C.
Curran, J. J., Chief Met., Walworth Co., Greensburg, Pa.
Curtis, G. H., Met. Dept., Dodge Chicago Plant, Chrysler Corp., 7401 S. Cicero Ave., Chicago, Ill.

Davis, C. A., Purchasing Dept. Engr., Caterpillar Tractor Co., Peoria, Ill.
Day, W. E., Jr., Met., Mack Mfg. Co., Jersey Ave., New Brunswick, N. J.
Deane, H. A., Wks. Mgr., American Brake Shoe Co., Brake Shoe & Castings Div., 230 Park Ave., New York, N. Y.
Deas, R. R., Jr., Asst. to Vice Pres., American Cast Iron Pipe Co., Birmingham, Ala.
De Longe, K. A., Met., International Nickel Co., Inc., 67 Wall St., New York, N. Y.
Delport, V., Penton Publishing Co., Ltd., 2 Caxton St., Westminster, London, S. W. 1, England.
Den Breejen, Adrian C., Chief Lab. Tech., Hydro-Blast Corp., 2550 N. Western Ave., Chicago, Ill.
Denison, A. C., Pres., Fulton Foundry & Machine Co., E. 75th St. & Morgan Ave., Cleveland, O.
Deutsch, H. J., Plant Mgr., Aluminum Co. of America, Box 31, Fairfield, Conn.
DeYoung, A., Adv. Mgr., Whiting Corp., Harvey, Ill.
Dierker, A. H., Res. Engr., Engineering Experiment Sta., Ohio State University, Columbus, O.
Dietert, H. W., Pres., Harry W. Dietert Co., 9330 Roselawn Ave., Detroit, Mich.
Dobson, D. I., Met., General Malleable Corp., Waukesha, Wis.
Dolan, J. M., Compressor Engineering Div., Sullivan Machinery Co., Michigan City, Ind.
Donaldson, R. A., Met., Woodward Iron Co., Woodward, Ala.
Donnocker, H. E., Field Engr., Ottawa Silica Co., Ottawa, Ill.
Donoho, C. K., Met., American Cast Iron Pipe Co., Birmingham, Ala.
Draffin, J. O., Prof., Theoretical and Applied Mechanics Dept., University of Illinois, 218 Talbot Lab., Urbana, Ill.
Dreher, G. K., Works Mgr., Ampco Metal, Inc., 1745 S. 38th St., Milwaukee, Wis.
Duma, J. A., Met., Norfolk Navy Yard, Portsmouth, Va.
Dunbeck, N. J., Vice Pres., Eastern Clay Products, Inc., Eifort, O.
Dunleavy, H. J., Benton Harbor Malleable Industries, Benton Harbor, Mich.
Dunn, L. A., Supt. Fdries., General Electric Co., Erie, Pa.
Dwyer, Pat., Engineering Editor, *The Foundry*, Penton Bldg., Cleveland, O.

Eagan, T. E., Chief Met., Cooper-Bessemer Corp., Grove City, Pa.
Eash, J. T., Res. Met., International Nickel Co., 30 Oak St., Bayonne, N. J.
Eddy, W. P. Jr., Exec. Engr., General Motors Truck & Coach Div., Yellow Truck & Coach Co., South Blvd., Pontiac, Mich.
Edens, W. W., Chief Met., Ampco Metal, Inc., 1745 So. 38th St., Milwaukee, Wis.
Edgar, A. J., Tech. Adv., Gray Iron Founders' Society, 1341 Connecticut Ave., N. W., Washington, D. C.
Ednie, J. F., Chief Met., Duquesne Smelting Corp., 50—33rd St., Pittsburgh, Pa.
Egeberg, B., Tech. Consultant, International Silver Co., Meriden, Conn.
Engelhard, E., Pyrometer Technician, Wright Aeronautical Corp., Plant No. 3, Paterson, N. J.
Eggleston, G. K., Chief Engr., Barnes Mfg. Co., Mansfield, Ohio.

Engstrom, E. W., Met., International Harvester Co., Rock Island, Ill.
Erler, John, Chief Met., Farrel-Birmingham Co., Ansonia, Conn.
Evans, F. R., Fdry. Instr., Massachusetts Institute of Technology, Room 35-262, Cambridge, Mass.
Evans, G. S., Met., Mathieson Alkali Works, 60 E. 42nd St., New York, N. Y.
Everhart, J. O., Asst. to Gen. Supt., Kentucky Fire Brick Co., Haldeman, Ky.

Farquhar, L. C., American Steel Foundries, 2039 E. Broadway, East St. Louis, Ill.
Finster, Werner, Chief Met., Reading Steel Casting Div., American Chain & Cable Co., Reading, Pa.
Fisher, F. E., 2304 Park Place, Evanston, Ill.
Flora, R., Met., Clover Foundry Co., Muskegon, Mich.
Forbes, D. P., Pres., Gunite Foundries Corp, Rockford, Ill.
Fox, J. C., Chief Met., Doehler Die Casting Co., Toledo, O.
Frank, R. H., Chief Met., Bonney-Floyd Co., Columbus, O.
Freund, C. J., Dean, College of Engineering, University of Detroit, Detroit, Mich.
Frost, J. G. G., Pres., Aluminum & Magnesium, Inc., 1 Huron St., Sandusky, O.
Fuerst, P. Charles, Fdry. Foreman, Falk Corp., Milwaukee, Wis.
Fuller, B. D., Sales Repr., Whitehead Bros. Co., 1228 Edward St., Lakewood, O.
Fulton, A. M., Vice Pres., Northern Malleable Iron Co., 867 Forest St., St. Paul, Minn.

Galloway, C. D., III, Fdry. Supt., Chambersburg Engineering Co., Chambersburg, Pa.
Gantz, M. E., Met., American Magnesium Corp., 2210 Harvard Ave., Cleveland, O.
Garry, Stephen, Foundry Div., Caterpillar Tractor Co., Peoria, Ill.
Gellert, J. H., Vice Pres. and Supt., Nichol-Straight Foundry Co., 3174 S. Archer Ave., Chicago, Ill.
George, W. B., Met. & Fdry. Engr., R. Lavin & Sons, Inc., 3426 S. Kedzie Ave., Chicago, Ill.
George, W. E., Asst. to the Management, Campbell Wyant & Cannon Foundry Co., Muskegon, Mich.
Gezelius, R. A., Met., Engr., General Steel Castings Corp., Eddystone, Pa.
Gibson, Wm. C., 29-33 Wilson St., Redfern, Sydney, Australia.
Goldie, J. G., Fdry. Instr., Cleveland Trade School, 535 Eagle Ave., Cleveland, O.
Goss, J. E., Apprentice Supvr., Brown & Sharpe Mfg. Co., Providence, R. I.
Goudielock, Wm. B., Met., Phelps Dodge Copper Products Corp., 40 Wall St., New York, N. Y.
Goudy, O. E., Fdry. Supt., Kelsey-Hayes Wheel Co., 3600 Military Ave., Detroit, Mich.
Graden, Wm. F., Lab. Technologist, Abrasive Co., Tacony & Fraley Sts., Philadelphia, Pa.
Greenidge, C. T., Met., Battelle Memorial Institute, 505 King Ave., Columbus, O.
Gregg, A. W., Exec. Engr., Equipment Div., Whiting Corp., Harvey, Ill.
Gregg, Robt., Fdry. Mgr., Reliance Regulator Corp., 1000 Meridian St., Alhambra, Calif.
Gregory, M. J., Factory Mgr., Caterpillar Tractor Co., Peoria, Ill.
Grennan, John, Instr., Dept. of Metal Processing, University of Michigan, Ann Arbor, Mich.
Griggs, H. C., Chief Met., Waterbury-Farrel Foundry & Machine Co., 453 Bank, Waterbury, Conn.
Guion, C. P., Distr. Mgr., W. W. Sly Mfg. Co., 1661 N. Milwaukee Ave., Chicago, Ill.

Hageboeck, A. E., Pres., Frank Foundries Corp., 2020 3rd Ave., Moline, Ill.
Hagemeyer, Henry, Pres., Castings Patent Corp., 11 S. La Salle St., Chicago, Ill.
Hall, John Howe, 611 Strath Haven Ave., Swarthmore, Pa.
Halliwell, G. P., Dir. of Res., H. Kramer & Co., 1347 W. 21st St., Chicago, Ill.
Hambley, W. A., Fdry. Met., Allis-Chalmers Mfg. Co., Milwaukee, (Mailing address: 1170 N. 43rd St., Milwaukee, Wis.)
Hamblin, K. H., Asst. Gen. Mgr., General Fire Extinguisher Co., Providence, R. I.
Hammond, T. S., Chief, Chicago Ordnance District, 39 S. La Salle St., Chicago, Ill.
Hansen, S. B., Dust Res. Eng., International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.
Harrington, R. F., Fdry. Supt. & Chief Met., Hunt-Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass.
Healey, M. V., Casting Met., General Electric Co., 1 River Rd., Schenectady, N. Y.
Hermann, C. C., Gen. Mgr., Claude B. Schneible Co., 3951 Lawrence Ave., Chicago, Ill.
Hess, E. F., Met. Engr., Ohio Injector Co., Wadsworth, O.
Higgins, A. K., Met., Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Hindle, N. F., Asst. Secy., American Foundrymen's Association, 222 W. Adams St., Chicago, Ill.
Hitchcock, C. C., Partner and Supt., R. C. Hitchcock & Sons, 3023 Snelling Ave., Minneapolis, Minn.
Hoehn, C. J. P., Pres., Enterprise Foundry Co., 2902—19th St., San Francisco, Calif.
Holtby, Fulton, Asst. Prof., University of Minnesota, Mechanical Engineering Bldg., Minneapolis, Minn.
Horlebein, E. W., Pres., Gibson & Kirk Co., Warner & Bayard Sts., Baltimore, Md.
Hoyt, C. E., Treasurer, American Foundrymen's Association, 222 W. Adams St., Chicago, Ill.

Jacobs, Roy M., President, Standard Brass Works, 1220 St. Paul Ave., Milwaukee, Wis.
Jacobson, A. E., Co-Partner, Grand Haven Brass Foundry, Grand Haven, Mich.
Jacobson, K. J., Asst. Chief Chem., Griffin Wheel Co., 445 N. Sacramento Blvd., Chicago, Ill.
Jameson, A. H., Mgr. of Casting Sales, Malleable Iron Fittings Co., Branford, Conn.
Jennings, E. G., Assoc. Chief, Ingot & Scrap Sec., Office of Metals Control, Dept. of Munitions and Supply, Ottawa, Ont., Canada.
Jennings, W. R., Fdry. Supt., John Deere Tractor Co., Waterloo, Ia.
Job, Robert, Vice Pres., Milton Hersey Co., Ltd., 980 St. Antoine St., Montreal, Que., Canada.
Johnson, G. W., Supt., American Hoist & Derrick Co., St. Paul, Minn.
Johnson, H. W., Supt., Inland Steel Co., Indiana Harbor, Ind.
Johnson, J. Morgan, Vocational Supvr., Tri-City Manufacturers' Association, Box 148, Moline, Ill.
Johnston, T. G., Met. Engr., Pig Iron Div., Republic Steel Corp., Republic Bldg., Cleveland, O.
Jominy, W. E., Chief Met., Dodge-Chicago Plant, Chrysler Corp., 7401 S. Cicero Ave., Chicago, Ill.
Jones, E. O., Personnel Dir., Belle City Malleable Iron Co., Racine, Wis.
Jones, W. E., Chief Engr. and Met., Stockham Pipe Fittings Co., Birmingham, Ala.
Joseph, C. F., Met., Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.
Joseph, T. L., Head, Dept. of Met., University of Minnesota, Minneapolis, Minn.
Judson, H. H., Fdry. Supt., Goulds Pumps, Inc., 238 Fall St., Seneca Falls, N. Y.
Juppenlatz, J. W., Chief Met., Lebanon Steel Foundry, Lebanon, Pa.

Kanter, J. J., Res. Met., Crane Co., 4100 S. Kedzie Ave., Chicago.
Kayser, J. A., Chief Refractories Engr., Laclede-Christy Clay Products Co., 1711 Ambassador Bldg., St. Louis, Mo.
Keeley, R. J., Chief Met., Ajax Metal Co., 46 Richmond St., Philadelphia, Pa.
Kelin, J. W., Asst. Sales Mgr., Federated Metals Div., American Smelting & Refining Co., 4041 Park Ave., St. Louis, Mo.
Kemp, J. E., Supv. of Training, Walworth Co., 3rd & Elm Sts., Kewanee, Ill.
Kennedy, R. E., Secretary, American Foundrymen's Association, 222 W. Adams St., Chicago, Ill.
Kennedy, W. A., Supv. of Products, Grinnell Co., Inc., 260 W. Exchange St., Providence, R. I.
Kindt, E. T., Pres., Kindt-Collins Co., 12697 Elmwood Ave., Cleveland, O.
Klopf, A. S., Vice Pres. & Mgr., Hansell-Elcock Co., 3153 S. California Ave., Chicago, Ill.
Kraner, Hobart M., Ceramic Engr., Bethlehem Steel Co., 701 E. 3rd St., Bethlehem, Pa.
Kuniansky, Max, Gen. Mgr., Lynchburg Foundry Co., 3817 Nicholas St., Lynchburg, Va.
Kyle, P. E., Asst. Prof., Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Mass.

Laird, Wm. J., Met., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Lamker, H. G., Supt. of Fdries., Wright Aeronautical Corp., Paterson, N. J.
Lammering, J. F., Vice Pres., Hammond Brass Co., Summer St., Hammond, Ind.
Lancashire, Ernest, Chief Chem., Detroit Steel Casting Co., 4069 Michigan St., Detroit, Mich.
Lane, D. F., Dir. of Training, Bethlehem Steel Co., Maryland Plant, Sparrows Point, Md.
Lane, P. S., Chief Res. Engr., Muskegon Piston Ring Co., Sixth & Alpha, Muskegon, Mich.
Lansing, James H., Shop Practice & Development Engr., Malleable Founders' Society, Union Commerce Bldg., Cleveland, O.
Larsson, C. F., Air Filter & Equipment Co., 228 N. La Salle St., Chicago, Ill.
Lauenstein, C. F., Chief Met., Link-Belt Co., 220 S. Belmont St., Indianapolis, Ind.
Lawson, C. C., Supt., Wagner Malleable Iron Co., Decatur, Ill.
Lee, R. L., Comptroller, Grede Foundries, Inc., 6432 W. State St., Milwaukee, Wis.
Lefler, M. J., Works Mgr., Western Foundry Co., 3634 S. Kedzie Ave., Chicago, Ill.
Leisk, J. A., Gen. Supt., Fdries. & Patt. Shops, Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Leisk, J. T., Met., Chicago Hardware Foundry Co., North Chicago, Ill.
Lentz, J. P., International Harvester Co., Indianapolis, Ind.
Leroux, G. J., Asst. Mgr., National Malleable & Steel Castings Co., 10600 Quincy Ave., Cleveland, O.
Lesser, Nathan, Asst. Chief Engr., Deere & Co., Moline, Ill.
Levi, W. W., Met., Lynchburg Foundry Co., Radford, Va.
Lillieqvist, G. A., Res. Director, American Steel Foundries, East Chicago, Ind.
Lindgren, R. A., Supt., Blast Furnaces, Wisconsin Steel Works, 2701 E. 106th St., South Chicago, Ill.
Lindsay, R. W., Res. Met., Sealed Power Corp., Muskegon, Mich.
Linnell, W. S., Wisconsin Steel Co., Chicago, Ill.
Locke, Charles, Met., West Michigan Steel Foundry Co., Muskegon, Mich.
Long, Leighton M., Met. & Fdry. Supt., Bunting Brass and Bronze Co., 715 Spencer Ave., Toledo, O.
Lorig, C. H., Met., Battelle Memorial Institute, 505 King Ave., Columbus, O.
Lottier, L. F., Asst. Met., Peoples Gas Light & Coke Co., 122 S. Michigan Ave., Chicago, Ill.
Lowe, John, Battelle Memorial Institute, 505 King Ave., Columbus, Ohio.
Lownie, H. W., Jr., Met. Mgr., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Maack, H. W., Chief Chem. & Met., Crane Co., 4100 S. Kedzie Ave., Chicago, Ill.
MacKenzie, J. T., Chief Met., American Cast Iron Pipe Co., Box 2603, Birmingham, Ala.
MacNeill, W. J., Pres., Federal Malleable Co., 805 S. 72nd St., West Allis, Wis.
Mahin, W. E., Engr., Feeder Engrg. Dept., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Maloney, Wm. W., Staff Assistant, American Foundrymen's Association, 222 W. Adams St., Chicago, Ill.
Martin, W. E., Met., Sperry Gyroscope Co., Inc., 158-11 72nd Ave., Flushing, N. Y.
Mason, F. R., Asst. Plant Mgr., Riley Stoker Corp., Foot of Walker St., Detroit, Mich.
Massari, S. C., 1443 Franklin Ave., River Forest, Ill.

Mathieson, C., Prod. Mgr., Whitehead Bros. Co., Box 864, Albany, New York.
Mathis, E. C., Met., Pickands Mather & Co., 332 S. Michigan Ave., Chicago, Ill.
May, P. J., Service Engr., Cleveland Quarries Co., 1125 Builders Exchange, Cleveland, O.
McCandlish, R. W., Sales Engr., Research Corp., 59 E. Van Buren St., Chicago, Ill.
McCarroll, R. H., Chief Chem. & Met., Ford Motor Co., Dearborn, Mich.
McClaren, Lewis D., Mgr., By-Prod. Coke Dept., Republic Coal & Coke Co., 8 S. Michigan Ave., Chicago, Ill.
McDougall, A. H., Vice Pres., Whiting Corp, Harvey, Ill.
McElwee, R. G., Mgr., Fdry. Alloy Div., Vanadium Corp. of America, 2440 Book Bldg., Detroit, Mich.
McFadden, W. H., 16th Floor, Trinity Life Bldg., Fort Worth, Tex.
McFerrin, W. B., Fdry. Met., Cadillac Motor Car Co., 2860 Clark Ave., Detroit, Mich.
McGrail, C. R., Mgr., Nickel Dept., Steel Sales Corp., 3348 S. Pulaski Rd., Chicago, Ill.
McKinney, M. E., Met., International Harvester Co. of Canada, Ltd., 196 Rosslyn Ave. S., Hamilton, Ont., Canada.
McKnight, W. A., Secy.-Treas., William F. Jobbins, Inc., P. O. Box 230, Aurora, Ill.
McMahon, W. O., Chief Fdry. Met., Sloss-Sheffield Steel & Iron Co., 3131—1st Ave. N., Birmingham, Ala.
McMillan, W. D., Met., International Harvester Co., McCormick Wks., Blue Island & Western Ave., Chicago, Ill.
McMullen, S., Western Electric Co., Cicero, Ill.
Melmoth, F. A., Vice Pres., Detroit Steel Casting Co., 4069 Michigan Ave., Detroit, Mich.
Meloche, D. H., Mgr., Met & Chem. Lab., Inst. of Thermal Research, American Radiator and Standard Sanitary Corp., 675 Bronx River Rd., Yonkers, N. Y.
Metzger, E. J., Plant Supt., Wellman Bronze & Aluminum Co., 2525 E. 92nd St., Cleveland, O.
Meyer, E. P., Gen. Supt., Chain Belt Co., 1600 W. Bruce St., Milwaukee, Wis.
Meyer, H. W., Sand Processing and Sand Research, General Steel Castings Corp., Commonwealth Plant, Granite City, Ill.
Miles, H. D., Pres., Buffalo Foundry & Machine Co., Buffalo, N. Y.
Miller, B. A., Chief Met., Baldwin Locomotive Works, Cramp Brass & Iron Foundries Div., Paschall Sta., Philadelphia, Pa.
Milligan, M., Met., The Lunkenheimer Co., Beekman and Waverly Aves., Cincinnati, O.
Moore, R. E., Pres. & Treas., Flockhart Foundry Co., 83 Polk St., Newark, N. J.
Morken, C. H., Supt. of Operations, Carondelet Foundry Co., 2101 S. Kingshighway, St. Louis, Mo.
Mount, O. E., Treas., American Steel Foundries, 410 N. Michigan Ave., Chicago, Ill.
Moynihan, Prof. J. R., Head, Materials Testing Laboratories, Cornell University, Ithaca, N. Y.
Mulcahy, B. P., Res. Engr., Citizens' Gas & Coke Utility, 49 S. Pennsylvania St., Indianapolis, Ind.
Munson, R. S., Vice Pres., Atlantic Steel Castings Co., 6th and Lloyd Sts., Chester, Pa.
Myers, Harold, Met., Sealed Power Corp., Sanford & Keating Sts., Muskegon, Mich.
Myers, O. Jay, Met., Wright Aeronautical Corp., Lockland, O.
Murphy, William H., Vice Pres., Castings Patent Corp., 11 S. La Salle St., Chicago, Ill.

Nass, C. V., Mgr. Foundry Div., Pettibone Mulliken Corp., 4710 W. Division St., Chicago, Ill.
Neiman, J. B., Gen. Mgr., Aluminum Dept., Federated Metals Div., American Smelting & Refining Co., 11630 Russell St., Detroit, Mich.
Nelson, Earl L., Crane Co., Chicago, Ill.
Nelson, Charles E., Asst. Dir. Met., Research, Dow Chemical Co., Midland, Mich.
Nelson, J. J., Gen. Mgr., Cramp Brass & Iron Fdries. Co., Paschall Sta. P. O., Philadelphia, Pa.
Nichols, A. S., Vice Pres., Illinois Clay Products Co., 608 S. Dearborn St., Chicago, Ill.
Nye, Howard B., Fdry. Engr., New York Air Brake Co., Watertown, N. Y.

O'Brien, B. C., Vice Pres., Roots-Connersville Blower Co., Connersville, Ind.
O'Connor, D. Frank, Walworth Co., Greensburg, Pa.
Oesterle, J. F., Prof. Met. Engrg., University of Wisconsin, Madison, Wis.
Olson, L. W., Works Mgr., Ohio Brass Co., Mansfield, Ohio.
Osborn, L. B., Sales Mgr., Hougland & Hardy, Inc., Evansville, Ind.
Overstreet, F. L., Illinois Clay Products Co., Chicago. (Mailing address: 837 Virginia St., Gary, Ind.)

Page, E. W., Mgr., General Electric X-Ray Corp., 2012 W. Jackson Blvd., Chicago, Ill.
Parker, D. L., Fdry. Supt., General Electric Co., 69 Norman St., Everett, Mass.
Parker, R. B., Safety Supv., American Brake Shoe Co., 230 Park Ave., New York.
Parker, T. D., Met. Engr., Climax Molybdenum Co., 500—5th Ave., New York, N. Y.
Parks, B. A., Plant Engr., Crane Co., 4100 S. Kedzie Ave., Chicago.
Parsons, R. W., Chief Met., Ohio Brass Co., Mansfield, O.
Patch, N. K. B., Secy., Lumen Bearing Co., 197 Lathrop St., Buffalo.
Payne, W. Harvey, Pres. & Gen. Mgr., Hydro-Arc Furnace Corp., 9 S. Clinton St., Chicago, Ill.
Peters, R. V., Supt., Bridgeport Brass Co., Bridgeport, Conn.
Petersen, E. A., Fdry. Mgr., Chrysler Corp., 7900 Jos. Campau Ave., Detroit, Mich.
Phillips, G. P., Chief Met., Automotive Foundry Div., International Harvester Co., 2600 W. 31st Blvd., Chicago, Ill.
Phillips, H. D., Plant Mgr., Lebanon Steel Foundry, Lebanon, Pa.
Phillips, W. J., Asst. Gen. Mgr., Symington-Gould Corp., 311 Oakdale Dr., Rochester, N. Y.
Post, Marshall, Vice Pres., Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Pragoff, Emile, Jr., Sales Supv., Hercules Powder Co., Delaware Trust Bldg., Wilmington, Del.

Priestley, K. H., Met., Eaton Mfg. Co., Fdry. Div., Vassar, Mich.
Pryse, L. W., Salesman, Hickman Williams & Co., First National Bank Bldg., Cincinnati, O.
Pugsley, William, Mgr. of Engrg., The Hays Corp., 750 E. 8th St., Michigan City, Ind.
Pyle, Adam, Jr., Secy-Treas., Pyle Pattern & Mfg. Co., 1201 Sanford St., Muskegon, Mich.

Quartz, H. O., Gen. Supv. of Welding, Allis-Chalmers Mfg. Co., So. 70th St., Milwaukee, Wis.

Randall, C. P., Service Engr., Eastern Clay Products, Inc., Eifort, O. (Mailing address: 33 Bass St., Wollaston, Mass.)
Rassenfoss, J. A., Supervising Engr., Research Lab., American Steel Foundries, East Chicago, Ind.
Reichert, W. G., W. G. Reichert Engineering Co., 1060 Broad St., Newark, N. J.
Reid, Vaughan, Pres., City Pattern Foundry & Machine Co., 1161 Harper Ave., Detroit, Mich.
Reininga, J., (Miss), Asst. Treas., American Foundrymens' Association, 222 W. Adams St., Chicago, Ill.
Reitinger, Harry, Ind. Engr., Bethlehem Steel Co., Bethlehem, Pa.
Reynolds, J. E., Supt., U. S. Pipe & Foundry Co., Bessemer, Ala.
Rich, H. M., Electro Metallurgical Sales Corp., 30 E. 42nd St., New York, N. Y.
Ries, Dr. H., 401 Thurston Ave., Ithaca, N. Y.
Riggan, F. B., Met., Key Co., East St. Louis, Ill.
Rishel, H. M., Works Mgr., American Steel Foundries, Cast Armor Plant, 3200 S. Dickey Rd., East Chicago, Ind.
Rishor, Donald H., Fdry. Consultant, Geo. F. Pettinos, Inc., 318 Selye Terrace, Rochester, N. Y.
Rittinger, C. J., Fdry. Met., Riley Stoker Corp., Foot of Walker St., Detroit, Mich.
Roberts, C. S., Vice Pres., Dodge Steel Co., 6501 Tacony St., Philadelphia, Pa.
Roby, L. E., Jr., Supt., Peoria Malleable Castings Co., Ft. of Alexander St., Peoria, Ill.
Romanoff, Wm., Vice Pres., H. Kramer & Co., 2119 S. Loomis St., Chicago, Ill.
Root, A. B., Jr., Asst. Gen. Mgr., Hunt Spiller Mfg. Corp., 383 Dorchester Ave., Boston, Mass.
Rosenthal, P. C., Met. Engr., Battelle Memorial Institute, 505 King Ave., Columbus, O.
Roth, E. L., Pres. & Gen. Mgr., Motor Castings Co., 1323 S. 65th St., Milwaukee, Wis.
Rother, W. H., Met., Buffalo Foundry & Machine Co., 1543 Filmore Ave., Buffalo, N. Y.
Roueche, W. Lee, Works Mgr., McWane Cast Iron Pipe Co., 1201 Vanderbilt Rd., Birmingham, Ala.
Rowe, C. E., Consulting Engr., Wolf Management Engineering, 7 S. Dearborn St., Chicago, Ill. (Mailing address: 1535 S. 60th Ct., Cicero, Ill.)
Rowe, H. J., Met. Engr., Aluminum Company of America, 2210 Harvard Ave., Cleveland, O.
Rudesill, L. H., Met., Griffin Wheel Co., 445 N. Sacramento Blvd., Chicago, Ill.
Ruppe, A. T., Fdry. Supt., Bendix Products Corp., South Bend, Ind.
Ruten, W. H., Asst. Prof., Industrial Processes, Polytechnic Institute of Brooklyn, Brooklyn, N. Y.

St. John, A. E., Met., Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York, N. Y.
St. John, H. M., Supt., Dept. No. 5, Crane Co., 4100 S. Kedzie Ave., Chicago, Ill.
Salzberg, H. K., Casein Co. of America, Bainbridge, N. Y.
Sawtelle, D. F., Met., Malleable Iron Fittings Co., Branford, Conn.
Schaller, Gilbert S., Cons. Engr., Webster Brinkley Co., P. O. Box 3127, Seattle, Wash.
Schilling, P. R., Asst. to Pres., Superior Steel & Malleable Castings Co., Benton Harbor, Mich.
Schnee, V. H., Supv. Engr., Battelle Memorial Institute, 505 King Ave., Columbus, O.
Schubert, C. E., Asst. Prof., Mechanical Engineering Dept., University of Illinois, Urbana, Ill.
Schuh, A. E., Dir. of Res., U. S. Pipe & Foundry Co., Burlington, New Jersey.
Schumacher, G. A., Met., Benton Harbor Malleable Industries, Graham Ave., Benton Harbor, Mich.
Schwartz, H. A., Mgr. of Res., National Malleable & Steel Castings Co., 10600 Quincy Ave., Cleveland, O.
Scobie, H. F., Instr., Foundry Practice, Mechanical Engineering Dept., University of Minnesota, Minneapolis, Minn.
Sedlak, F. J., Met., Ohio Brass Co., 324 Lexington Ave., Mansfield, O.
Sedlon, V. J., Pres., Master Pattern Co., 2100 W. Superior, Cleveland, O.
Sefing, F. G., Res. Met., International Nickel Co., 67 Wall St., New York, N. Y.
Shannon, L. N., Vice Pres., Stockham Pipe Fittings Co., Box 2592 Birmingham, Ala.
Sherman, R. A., Supv., Fuels Div., Battelle Memorial Institute, 505 King Ave., Columbus, O.
Sherwin, L. M., Fdry. & Pattern Shop Supt., Brown and Sharpe Mfg. Co., Providence, R. I.
Shoemaker, F. F., Fdry. Supt., Armour Research Foundation, 3300 S. Federal St., Chicago, Ill.
Siegel, Miguel, Chief of Scientific Service, Head, Foundry Dept., Instituto de Pesquisas Technologicas, Sao Paulo, Brazil.
Simpson, H. S., Pres., National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.
Sims, C. E., Supv. Met., Battelle Memorial Institute, 505 King Ave., Columbus, O.
Smith, A. J., Met., The Lunkenheimer Co., Beekman & Waverly Aves., Cincinnati, O.
Smith, E. B., Vice Pres., American Brake Shoe Co., Brake Shoe & Castings Div., 230 Park Ave., New York, N. Y.
Smith, E. K., Maj., Army Ordnance Dept. (Mailing address: 286 Fisher Rd., Grosse Point Farms, Mich.)
Smith, L. C., Engr., Spencer Turbine Co., Hartford, Conn.
Snow, Maxwell Y., Circuit Fdry. Instr., State of Wisconsin, 1720 E. Capitol Dr., Milwaukee, Wis.
Sohner, H. K., Met., International Harvester Co., Milwaukee, Wis.
Spindler, W. A., Asst. Prof., Dept. of Metal Processing, University of Michigan, 2047 East Engineering Bldg., Ann Arbor, Mich.

Spooner, A. P., Met. Engr., Bethlehem Steel Co., Bethlehem, Pa.
Stantial, G. B., Fdry. Supt., Illinois Malleable Iron Co., 1801 Diversey Parkway, Chicago, Ill.
Starmann, G. H., Chief Met., Apex Smelting Co., 2537 W. Taylor St., Chicago, Ill.
Stavert, J. C., Asst. to Vice Pres., Babcock-Wilcox & Goldie-McCulloch, Ltd., Galt, Ont., Canada.
Steinebach, F. G., Editor, *The Foundry*, Penton Bldg., Cleveland, O.
Stettbacher, Wayne, Secy., Employers Assn. of Detroit, 2309 Book Tower, Detroit, Mich.
Stevens, R. P., Refractories Engr., Chicago Retort & Fire Brick Co., 208 S. La Salle St., Chicago, Ill.
Stolzenburg, A. W., Chief Inspector, Aluminum Co. of America, 3311 Dunn Rd., Detroit, Mich.
Stone, R. H., Sales Mgr., Vesuvius Crucible Co., P. O. Box 8275, Swissvale, Pa.
Storie, D. M., Supt., Fittings, Ltd., Oshawa, Ont., Canada.
Stuart, H. W., Asst. Dir. of Research., U. S. Pipe & Foundry Co., Burlington, N. J.
Sugar, Alfred, Met., U. S. Metals Refining Co., 61 Broadway, New York, N. Y.
Sullivan, J. D., Chief Chem., Battelle Memorial Institute, 505 King Ave., Columbus, O.

Taylor, H. F., Senior Met., Naval Research Lab., Anacostia Sta., Washington, D. C.
Teetor, R. J., Pres., Cadillac Malleable Iron Co., Cadillac, Mich.
Thieme, C. O., Works Mgr., H. Kramer & Co., 1347-59 W. 21st St., Chicago, Ill.
Thomas, L. B., Chief Met., Campbell Wyant & Cannon Foundry Co., Muskegon, Mich.
Thomson, James, Chief Plant Engr., Continental Roll & Steel Foundry Co., East Chicago, Ind.
Thomson, Dr. Robert, Met., Dodge-Chicago Plant, Chrysler Corp., 7401 S. Cicero Ave., Chicago, Ill.
Timmons, G. A., Met., Climax Molybdenum Co., 14410 Woodrow Wilson, Detroit, Mich.
Tobin, J. F., Sales Engr., American Blower Corp., 228 N. La Salle St., Chicago, Ill.
Touceda, E., 943 Broadway, Albany, N. Y.
Tour, Sam, Pres., Sam Tour & Co., Inc., 65 Pine St., New York.
Troy, E. C., Met., Dodge Steel Co., 6501 Tacony, Philadelphia, Pa.
Tucker, L. F., City Pattern Works, 422 E. Monroe St., South Bend, Ind.

Utley, S. Wells, Pres. and Gen. Mgr., Detroit Steel Casting Co., 4069 Michigan Ave., Detroit, Mich.

Vanick, J. S., Met., International Nickel Co., 67 Wall St., New York, N. Y.
Van Order, Dean, Ind. Engr., Burnside Steel Fdry. Co., 1300 E. 92nd St., Chicago, Ill.
Vial, F. K., Vice Pres., Griffin Wheel Co., 445 N. Sacramento Blvd., Chicago, Ill.
Vinning, R. E., Supv. of Methods, Revere Copper & Brass Co., Baltimore, Md.

Wade, C. W., Training Supv., Foundry Div., Caterpillar Tractor Co., 600 W. Washington St., Peoria, Ill.
Wagner, I. R. Vice Pres. & Gen. Mgr., Electric Steel Castings Co., Speedway, Indianapolis, Ind.
Wagner, J. A., Pres., Wagner Malleable Iron Co., Decatur, Ill.
Waldron, H. C., Fdry. Supt., Nordberg Mfg. Co., 3073 S. Chase Ave., Milwaukee, Wis.
Walker, Stanton, Consulting Engr., National Industrial Sand Assn., Munsey Bldg., Washington, D. C.
Wallis, W. B., President, Pittsburgh Lectromelt Furnace Corp., P. O. Box 1125, Pittsburgh, Pa.
Walls, F. J., Met., International Nickel Co., 8-217 General Motors Bldg., Detroit, Mich.
Walter, R. D., Res. Chem., Core Oil Dept., Werner G. Smith Co., 2191 W. 110th St., Cleveland, O.
Warchol, Michael, Met., Atlas Foundry Co., 131 S. Livernois, Detroit, Mich.
Ward, L. A., Mgr., Mill Control Dept., Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury, Conn.
Ward, Robt. E., Chief Met., Eclipse Pioneer Div., Bendix Aviation Corp., Bendix, N. J.
Wartgow, F. E., Mgr., Employees Suggestion System, American Steel Foundries, 410 N. Michigan Ave., Chicago, Ill.
Washburn, H. S., Pres., Plainville Casting Co., Plainville, Conn.
Waterfall, Arthur T., 2488 Virginia Park St., Detroit, Mich.
Weaver, V. P., Asst. Met., American Brass Co., 414 Meadow St., Waterbury, Conn.
Webster, Donald, Chem., American Laundry Machinery Co., 50 Sherer St., Rochester, N. Y.
Weigand, S. A., Met., The Lunkenheimer Co., Beekman and Waverly Aves., Cincinnati, O.
Wertz, R. O., Fdry. Instr., Fullerton Union High School, 636 N. Golden Ave., Fullerton, Calif.
West, T. D., Fdy. Supt., American Radiator & Sanitary Corp., 2801 Preble Ave., Pittsburgh, Pa.
Weston, B. M., Chem. Dir., Aristo Corp., 5944 E. Davison, Detroit.
Westover, Jeff. Alan, Member of Staff, Dyer Engineers, Inc., 1650 Union Commerce Bldg., Cleveland, O.
Wick, James L., Jr., Pres. Falcon Bronze Co., 218 S. Phelps St., Youngstown, O.
Wieland, R. G., Plant Mgr., Forest City Foundry Co., 2500 W. 27th St., Cleveland, O.
Wilder, H. H., Foundry Tech., Vanadium Corp. of America, 2440 Book Tower Bldg., Detroit, Mich.
Wilke, R. E., Met., Testing & Res. Labs., Deere & Co., Moline, Ill.
Williams, D. C., Sand Research Asst., East Mechanical Laboratory, Cornell University, Ithaca, N. Y.
Williams, F. T., Plant Mgr., South San Francisco Plant, Enterprise Engine & Foundry Co., 710 Division St., South San Francisco.
Wilson, L. C., Gen. Mgr., Reading Steel Casting Div., American Chain & Cable Co., Inc., Reading, Pa.
Wine, W. C., Gen. Supt., Sibley Machine & Foundry Corp., 206 E. Tutt St., South Bend, Ind.
Wise, L. J., Asst. to Exec. Vice Pres., Chicago Malleable Castings Co., 120th & S. Racine, Chicago, Ill.
Woldman, N. E., Chief Met. Engr., Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
Wolf, F. L., Chief, Graphite Allocation & Conservation Branch "K," Materials Div., War Production Board, Washington, D. C. (Mailing address: 2901 Connecticut Ave., N.W., Apt. 312, Washington, D.C.
Wolff, Chris. J., Antioch Township, Ill.
Womochel, H., Res. Asst., Engineering Experiment Sta., Michigan State College, East Lansing, Mich.
Wood, S. V., Pres. & Mgr., Minneapolis Electric Steel Casting Co., 3800 N. E. 5th, Minneapolis, Minn.
Wood, T. J., Asst. Supt., American Brake Shoe & Foundry Co., Mahwah, N. J.
Woodliff, E. E., Foundry Sand Service Engineering Co., 14862 Forrer St., Detroit, Mich.
Woodward, R. C., Chief Met. & Supt. of Foundries, Bucyrus-Erie Co., South Milwaukee, Wis.
Woody, W. L., Vice Pres. in Charge of Operations, National Malleable & Steel Castings Co., Cleveland, O.
Wornom, A. H., App. Inst., Newport News Shipbuilding & Dry Dock Co., Newport News, Va.
Wright, C. P., Vice-President, American Brake Shoe & Foundry Co., 332 S. Michigan Ave., Chicago.

Young, E. R., Met. Engr., Climax Molybdenum Co., 230 N. Michigan Ave., Chicago, Ill.

Zabel, G. A., Asst. Supt., Universal Foundry Co., Oshkosh, Wis.
Zahn, Charles, Fdry. Supt., Vilter Mfg. Co., 2217 S. 1st, Milwaukee.
Zemanek, R. J., Met., U. S. Graphite Co., Saginaw, Mich.
Ziebell, A. C., Pres. & Treas., Universal Foundry Co., Oshkosh, Wis.
Ziegler, N. A., Res. Met., Crane Co., 4100 S. Kedzie Ave., Chicago.
Zirzow, E. C., Core Room Foreman, National Malleable & Steel Castings Co., 10590 Quincy Ave., Cleveland, O.

A Word of "Thanks" from A.F.A. Staff

"TO WHOM It May Concern:" The A.F.A. Staff takes this opportunity of publicly expressing thanks for the promptness with which authors of 1943 Congress papers, and those who discussed those papers, returned to Association headquarters both copy and proofs for publication in the official "Transactions." Seldom indeed has this material been reviewed, corrected and returned so quickly, thus making valuable data available for publication that much sooner.

Ordinarily, the Staff would prefer to express its appreciation through individual personal letters. Pressure of time and manpower, however, make advisable this more public form of recognition. "Orchids" to our authors and discussionists.

Jim Allan Serves on Fire Protection Body

YOUR Association recently became a member of the National Fire Protection Association, and will be represented on that body by Jas. R. Allan, International Harvester Co., Chicago, Chairman of A.F.A. Safety and Hygiene Codes Committee. The membership, taken out in the interest of Mr. Allan's committee, will assist materially in keeping A.F.A. members up to date on current practices, decisions and procedures associated with the all-important subject of fire prevention.

The National Fire Protection Association, organized in 1896, the same year A.F.A. was established, is the clearing house for all authoritative data on fire waste, protection and prevention. It prepares codes and recommended practices, sets standards for checking fire waste, and publishes a great deal of technical literature in connection with its educational work.

The recognized importance of employer-employee relations today has greatly increased the supervisor's responsibilities. Upon his shoulders falls the major burden not only of maintaining production but of solving all manner of worker problems. The following article focuses attention on building plant morale and developing leadership, and emphasizes the extreme importance of labor relations today.

Some Fundamental Steps for Supervisors in Getting Along with Their Men

By Stephen Garry
Foundry Division, Caterpillar Tractor Co., Peoria, Ill.

HOW many of us are "Arm Chair Admirals?" There are very few of us who don't enjoy friendly discussions as to "*How we would* run this War!" or "Map that Strategy!"

We are all "Arm Chair Admirals," or Generals, or Commanders—call it what you will –for the history of supervision today can be compared to world leaders and rulers. Intelligent, kind, broadminded leaders make industrious, happy and contented people. Vicious, arrogant, selfish, and lacking-in-judgment rulers create oppression and unnecessary strife.

Supervisor Sets Example

So it is with the entire world, from nations to the smallest industry. Thus, we as supervisors must plan and carry out intelligent strategy on our home front.

American industry is doing splendid work in training supervision through foremen conferences, discussion groups and instructive classes. These instructions are given, however, only to men and women who hold supervisory positions. There are no comprehensive training instructions or courses given to members of the working force who must furnish material for future supervision and leadership. It is only natural, then, for the worker seeking promotion to pattern himself after his present foreman or one that he particularly admires.

In industry, supervisors teach by example, whether they want to or not. In a factory, people are in compact groups where the action of one person, especially a supervisor, influences others.

There is a curious, common, and sincere belief that is held by men and women in supervisory positions that his or her own problems of supervision are peculiar to his own business or locality and to the particular type of people who make up his own department. Yet from evidence founded on records of foremen's conferences from every part of the country, supervisors are handling their subordinates and solving their problems in much the same fashion, no matter whether the members of a group are first-rank executives in a shipbuilding industry in San Francisco or a textile corporation in the East.

The more one studies supervision methods, the more one becomes convinced that all workers of whatever color, creed, race, background or station in life, and in whatever line of work they may be engaged, respond to exactly the same supervisory motivations.

Response Is Universal

Supervision that creates resentment among one group of workers will make any other group just as angry. The man who plays fair with his workers in Kansas City gets exactly the same reaction from his workers as does the man who shoots square with his employees in Pittsburgh.

What we so often forget is that industrial supervision is the *art* of directing the efforts of *human beings,* and that all human beings respond to the same mental and emotional stimulus.

This does not mean that a good supervisor handles everyone alike, and it does not mean that there are not peculiarities in supervision in different localities and among different types of subordinates. It simply means that the *essential* elements of leadership are the same everywhere and that good, intelligent supervision in one place follows the same *general* principles as does good leadership anywhere else. Nowhere in supervision is this more consistently true than in the development of proper morale, or proper mental attitude in a group of subordinates.

Building Morale

Building morale is the greatest responsibility of any leader, be he foreman or floorwalker. Balancing this responsibility as a whole against the responsibilities of industry today—meeting and bettering quotas and contracts, stepping up schedules—seems like a very small matter. It is so small that it looms large in microscopic possibilities.

If our supervisors give constant attention to this one factor, there is nothing impossible of accomplishment in their departments. A group will have proper morale if the supervisor pays attention to developing the three factors which go to making up good morale in any organization:

1. In order to have a proper mental attitude toward his job, a worker must be *interested* in the work he is doing.

Frequent supervisory meetings like that above, at which problems of personnel and safety as well as production are freely discussed, give foremen a broader perspective on their responsibilities. It is said that there are always three sides to any question: "Your side, the other fellow's side, and the right side."

2. He must be satisfied with his general working conditions.

3. The third and most important (since the other two depend upon it, to a certain extent) is the quality of leadership displayed by the supervisor.

Each factor can be discussed separately. As to the matter of job interest, much of this interest which a worker shows in his job is a matter of craft pride and is inherent in the man himself.

Everyone has this pride in achievement in greater or lesser degree. Even a poor foreman cannot kill it entirely in a subordinate, but he can cripple it badly and thereby rob the worker of one of his strongest incentives for good production. If the worker never receives recognition for good work or his tools are bad and no effort is made to correct this, or if exceptional effort is met only with the statement to "do better next time," the worker cannot be blamed for loss of morale.

Men Must Feel Important

One of the strongest desires that move all men is the desire to uphold the ego. When we give a man a better opinion of himself, we earn his good will, because we satisfy one of his basic needs. One of the surest ways to establish influence over people is to take pains to show them that they are important, and the only way to get men to do anything is to cause them to "want to do it."

Another important interest factor is fear. The old-style, hard-boiled, slave-driving type of leader used fear almost exclusively as a means of stimulating a man's interest in work. The modern foreman uses it too, but only in exceptional cases and then more or less indirectly.

Its use today as an interest factor takes the form of fear of censure, fear of ridicule, fear of loss of pay, and finally, fear of loss of job. Fear should only be used as motivation in a particularly hard case. Even then, there should be no threatening.

A wise supervisor will use it only as indirect motivation in the same degree that he, personally, feels the necessity for it in his own experience. If he is honest, he will admit that, but for the prodding effect of fear in some form, he probably would not now be a supervisor and might not even be working at all.

The creation and maintenance of satisfaction have often been confused with *interest development*. They are entirely distinct and separate. A worker may be interested in his work and entirely dissatisfied with his working conditions, just as he may be *satisfied* with the money he is making but not interested in the work he is doing. Both factors must be present in high degree before good morale can exist.

As compared with interest, the worker's satisfaction will depend somewhat on influences beyond the foreman's control. Satisfaction is created and affected by wages paid, surroundings in working and recreation quarters, and by economic conditions of the country as a whole. During normal times these three conditions present their normal problems, but during this period of war production, speed and economic adjustment, each factor seems to clash with the other. We can all see the "whys" of dissatisfaction in parts of the country today.

Thus, it is entirely up to the foremen to give and work harder at his job of creating satisfaction and uplifting morale. This responsibility, fortunately, is shared equally by management and individual supervisors. Workers will put up with poor leadership when wages are high, but a good foreman can so handle his workers that much of the dissatisfaction resulting from a justifiable plant-wide cut in wages can be overcome.

Instead of creating satisfaction among his men, a supervisor sometimes creates dissatisfaction among them when there is no real cause. If he goes around criticizing the management, or playing favorites, or reprimanding publically, he injures the satisfaction prevalent in his group.

Perhaps the most serious sin of a supervisor is to play favorites, although the temptation to do so is constant. There are always employees who are more likable, or who are handshakers and back patters. To remain impartial in his dealings with all subordinates is often the hardest task imposed on the supervisor; yet if he fails at this, he fails as a supervisor.

Developing Leadership

The third and most important factor to develop is the quality of leadership. To understand this factor, we must reduce the qualities of leadership to eight essentials:

Intelligence.
Integrity.
Forcefulness.
Fairness.
Loyalty.
Kindness.
Knowledge of Work.
Health.

That is the *perfection* list. However, it could be simmered down to two main points, Intelligence and Knowledge of Work, and Loyalty, Integrity and Health could be added to round out the picture.

Intelligence is defined as the inherent ability to think clearly. This quality may be found among men and women of all stations in life, regardless of education, breeding or experience. This is the first and foremost of essential qualifications in leadership.

Knowledge of work, on the other hand, may appear at the bottom of the list. Men may change from one line of work with which they are utterly familiar to another about which they know next to nothing, and still continue splendid leadership in their new endeavor. This point then is an indispensable attribute of leadership.

Men like to work for an intelligent supervisor and are a bit proud of the brains of their boss. Since the loyalty of any group may be founded upon such respect and admiration, it may readily be seen that intelligence bears other fruit than that evident in the solution of the problem at hand.

Even when this quality is unaccompanied in the supervisor's makeup by the warmer attributes of kindliness, fairness and integrity, it alone often will hold a group's loyalty. However, the supervisor should try to develop the other qualities as well.

Attributes of Leadership

Integrity, for example, in its fullest sense, is not the most common quality of leadership to be found among supervisors. The opposite of integrity is found in "buck passing, handshaking, back biting," and all the other bad practices which are met today even in some supervisory groups.

That individual who proves by his daily actions that he possesses certain principles of conduct and he has the respect of all those about him, may very well be the only man in the supervisory force whom all others will trust. Don't make the mistake of under-rating integrity. Combined with intelligence, it will take a supervisor far.

Forcefulness is an objective quality of leadership. It may come naturally, or it may be developed. It is not incompatible with the other qualities; indeed, without forcefulness a supervisor may possess intelligence and integrity and yet give the impression of weakness. Forcefulness, when activated by clear thinking, leads to that decisiveness in intelligent action which we associate with a competent supervisor or leader.

Men Cannot Be Driven

However, do not confuse it with a hard-boiled attitude. Men cannot be driven with old-fashioned bellowing, but they can be led with intelligence, kindness and firmness.

Fairness is another quality whose scope is greater than its attribute. As a developer of morale, fairness on the supervisor's part in all his decisions stands close to the top of the list. In the minds of the worker, the management is fair or unfair, intelligent or stupid as the foreman is intelligent or stupid, and it is helpful or friendly as the foreman is helpful or friendly.

All attributes of leadership are calculated to inspire loyalty in the members of the working force for the supervisor and, more important, for the company itself. However, we are mainly interested in the loyalty of the supervisor himself.

To every concern there comes a time when this loyalty is of the greatest value. Loyalty on the part of the supervisor can be expressed in many ways. He is thoroughly sold on company policies. He defends any action on the part of management to his workers. A supervisor who evaluates every order that he receives so as to decide whether or not he is in favor of it and will support its execution, is not worth his salt to his company.

The leader to whom his workers entertain real affection is the one who tempers all his decisions in human-factor supervision with kindliness. This quality may be entirely lacking in a supervisor who possesses to a high degree all the other attributes, yet it is the element in our relationship with workers which humanizes the sterner qualities. Its absence reduces leadership to something unpleasantly mechanical, yet its presence in too great a quality gives an impression of weakness.

It is a fine art to know just how far to permit kindliness to enter into dealings with workers. There is no rule to govern the degree of kindliness in handling particular supervisory problems. Only experience and an intimate knowledge can guide the supervisor in this matter.

Health is an essential attribute of a leader of men, and it is easy to see why older executives emphasize its importance while younger ones take it for granted. Until the younger supervisor has found it necessary to call upon his ultimate reserve of strength to get through a particularly trying day, he has no real conception of the importance of health as an element of good supervision. It should be pointed out that such essential qualities as forcefulness, kindliness and even fairness will not normally be in evidence when a supervisor's health is poor.

The Labor Relations Problem

Today all foremen and supervisors are concerned directly or indirectly with the labor relations problem. The July, 1943 issue of *Reader's Digest* reprinted an article published in their magazine 20 years ago, entitled "The Personal Touch in Labor Relations." After 20 years, this magazine stated, "This article is a most timely contribution to labor discussion in 1943." It is worth while quoting the following passages so that we can associate the statements with the supervisor's part in assisting management with labor relations:

"The labor problem often is made to appear much more complex than it actually is. The subject should be considered in the light of four simple principles.

"(1) There are three sides to every question: Your side, the other fellow's side, and the right side. There was never a labor dispute in which either side was

100 per cent right. Whenever the employer and labor get together and compare notes, they will find the right side.

"(2) There never was a man big enough to hate and reason at the same time.

"(3) Almost all men, whether they wear broadcloth or overalls, want to play the game square. Lack of contact means lack of understanding. But often the lack of friendly association breeds suspicion, which in turn breeds hate and fear. Under these circumstances, it is impossible to have a rule of reason.

"(4) Too many foremen—the under-executives closest to the working man—have been indifferent to the worker's ambitions and good will. Solving labor troubles is a matter of common sense. Confidence and cooperation must be inspired. They cannot be forced. Good will and respect must be inspired. They cannot be compelled. In other words, you can *lead* a good man through the fires of hell, but you cannot *drive* him across the sidewalk."

Supervision Is Responsible

Here again the responsibility is placed right in the laps of supervisors, as they are the direct representatives of management.

There is not time in the busy workaday world to sit down and talk to each worker about the thing he is most interested in, but it takes no time to say to a man occasionally, "Putting the boy in school this year?" or "I hear you made a 76 on the municipal links Saturday."

The worker does not analyze what has happened to him, but it would amaze many supervisors to learn what a difference it makes in the whole attitude of the man to his work and to management in general, and in his feelings toward the company for which he works. It is not, as he may suppose, that you have shown a friendly interest in his boy or his golf score. It is that you knew and remembered that he had a son of that age, or that he, not somebody else, made that golf score.

In a plant where this sort of thing is done as a consistent policy, there may be disputes and dissatisfactions, but there will not be strikes. In one plant this has been the custom for 30 years, and it starts at the top with the plant manager and extends all the way down to the newest sub-foreman.

If an agitator wishes to stir up dissatisfaction in this plant, the management will give him the run of the place and a free meal at the cafeteria. They will tell him that if he can show the workers that they will benefit by whatever he suggests, everyone will be pleased because the management and the workers would both like to know what it is so that it can be adjusted.

A major fundamental of all supervision is "shooting square" with the men, without playing favorites with any. The foreman who considers his men as individuals, has the best chance to build and maintain plant morale. Here a group of supervisors carefully inspect employee records to make periodic appraisals of their men.

The time to defend the organization against the destructive ministrations of professional trouble makers is not after they appear on the scene of action, but 20 years before. An organization can be made immune to trouble makers just as a human body can be made immune to various diseases. A Filipino who has been fed for six months on a diet of polished rice, white bread and pearled barley will contact beriberi whether he is exposed to it or not, whereas one who has been living on natural brown rice, whole wheat bread and whole barley cannot be infected even though he sleeps with a diseased man and wears his clothes or has the diseased man's blood injected into his veins.

"Immunizing" a Plant

Likewise, an industrial organization which has not been "immunized" will contact dissatisfaction and will be hostile to its management whether agitators work or not; but it will resist the trouble makers if the entire supervisory force has for several years been consciously following the policy of considering the workers as normal human beings normally dominated by their emotional reactions.

The difference between a *supervisor* and a *constructive supervisor* lies in this factor of considering the men. The ordinary supervisor does what he is hired for—he keeps his department running and gets the work out. The constructive foreman does this as a matter of course, but he considers it one of his chief functions to build an actively favorable attitude at the same time.

A fence which leans to the North does not fall to the South when prolonged rains soften the soil around the fence posts and remove their support. The softening of the soil is a critical situation which permits the fence to follow the trend that the careless farmer has allowed to develop in preceding seasons. Things tend to fall in the direction in which they are leaning.

The attitude of men is a leaning in one direction or another.

The leaning may not be perceptible during times of no stress, but in human affairs there are bound to be leanings whether perceptible or not. So long as our industrial system involves the relationship between worker and employer, the leaning is bound to be away from management unless intelligent and persistent care is taken over long periods of time to insure a favorable attitude.

When the crisis occurs, when there are depressions, red ink balance sheets, layoffs, lowering of wages, and reduced working forces, management learns which way the leaning has developed. When at such times hostility and violence crop out, it is evident that management has ignored the cardinal principle that feelings are the essence of employee attitude.

In this fast moving world many problems come up, both on and off the job, which affect a man's attitude and output. Most employees welcome the chance to talk these things over with their foreman. The real leader does not try to give them any answers. Rather, by discussion he should help the worker analyze his own problem and work out the right answer after he has weighed all the facts.

The leader of men will give those under him ample opportunity to talk things over with him. He will encourage them by being approachable, by listening, by drawing out the story, by suggesting various alternatives, and by making the men think through their own situations until the answer is clear.

Handling Plant Grievances

Today, more than ever, we have with us the tender subject of grievances. A grievance is anything which adversely affects the man's attitude toward his job, his foreman or his company. Its cause may be real or imaginary; it may arise from conditions within the plant or outside. Whatever the true cause may be, the fact remains that output and quality may suffer unless something is done about it.

The handling of complaints or grievances is an essential part of every foreman's job. Nobody can or should do that for him. The way he handles such cases either builds or lessens confidence and good will. Here is a definite field for leadership.

The two basic steps for handling a grievance are: (1) Getting at the *facts*, and (2) *doing something* about the complaint.

Getting at the Facts

In getting at the facts, the foreman must keep these points in mind:

He should remember that the man had to screw up his courage to come to him in the first place. Whatever he had in mind, he thinks it is important.

He should put the man at ease, draw him out, listen to him patiently, let him do all the talking and not hurry him.

He should avoid arguing with him. The foreman's job is to remain calm and cool no matter what the man says.

He should be careful not to do or say anything which might make the man wish he had never brought up the matter.

He should get *all* the facts and avoid snap judgment.

He should restate the man's main points and ask him whether those are the real issues as he sees them. This will enable both to be sure they are talking about the same thing.

Settling the Grievance

While the worker is talking, the foreman should ask himself whether he can settle the issue himself, or pass it up the line. It would be unwise for him to decide a matter of basic company policy, where his action might establish a precedent more or less binding upon the company in future similar cases.

It is also well to remember that the unions usually claim that the individual worker cannot get a satisfactory adjustment of a grievance from the foreman because the foreman "talks a man down." To lean over backward in this respect, the foreman should consider these additional points:

He should be fair in appraising the man's complaint and should try to understand his point of view.

He should give the man the benefit of the doubt on any minor points.

If the foreman made a mistake, he should admit it. The man who is afraid to admit he is wrong is not big enough to be a leader of men.

If he feels that he can decide the matter, he should give the worker a definite answer or tell him he would like to think it over. In the latter case, he should promise the answer at a stated time.

He should not "kid the man along." If he thinks the man has no basis for a complaint, he should tell him so and tell him why.

He should know how to say "no" when the facts warrant it, but he should stand up for the man when the complaint is just.

He should keep his superiors informed on all serious grievances and not be afraid to ask for advice or counsel.

The foreman should try not to hold it against a man who goes over his head.

After the foreman has discussed a grievance with a man, he should tell the worker that he is glad he had a chance to talk it over and to understand his point of view.

Basis of Good Supervision

To summarize, every leader has a choice as to the approach, methods and devices he will use to get results. If a foreman wants to get the results that come from the interest and cooperation of his men, he may well follow these fundamentals of successful supervision:

Always be courteous.
See yourself in the other fellow's place.
Maintain consistent standards of conduct, performance, and quality.
Take a personal interest in your men.
Play no favorites.
Do not promise a thing you can't deliver.
Get all the facts before you act; never jump at conclusions.
Give full credit to others when it is deserved.
Never discipline a man in front of others.
Never lose your temper.

In the midst of problems which involve materials, tools, costs, equipment, production schedules,

and quality standards, the leader should remember that there is always the individual or group of individuals involved. It is some *person's* quality which is not up to standard; it is some *person* who fell down in not getting out a job on time. It is some *person* who misunderstood or failed to follow through.

It is in this human area that problems arise to test the foreman's leadership. The way for him to begin his success is to know his men—to see that they are not strangers. The leader can make his own job easier and improve the over-all results of his department if he chooses to develop teamwork, interest and cooperation by treating everyone as he himself would like to be treated.

WPB Names Committee for Aluminum Industry

ON AUGUST 2 the War Production Board announced the formation of an Aluminum Foundry Industry Advisory Committee, appointing Frederick Ayer II, Government presiding officer. Committee members include:

C. J. Amick, Century Metalcraft Corp., Los Angeles; C. A. Brantingham, Ebaloy Foundries, Inc., Rockford, Ill.; Bruce W. Burroughs, National Bronze & Aluminum Foundry Co., Cleveland; E. G. Fahlman, The Permold Co., Medina, Ohio; Grant Fink, Servel, Inc., Evansville, Ind.; Frank Gaines, SoCal Foundry, Los Angeles; H. G. Lamker, Wright Aeronautical Corp., Paterson, N. J.; A. J. Langhammer, Amplex Div., Chrysler Corp., Detroit; B. H. Newell, Buick Motor Div., General Motors Corp., Detroit; Randolph J. Roshirt, Bohn Aluminum & Brass Corp., Detroit; A. Rossett, Chicago Aluminum Castings Co., Chicago; Harry L. Smith, Jr., Aluminum Co. of America, Cleveland; Karl A. Stein, Acme Pattern & Tool Co., Inc., Dayton, Ohio.

Students test the physical strengths of cast metals.

Ill. Tech Course in Iron Metallurgy

ILLINOIS Institute of Technology, Chicago, is conducting a course in cast iron metallurgy, designed to relieve the shortage of metallurgists in the foundry industry in the Chicago area. The first class was held on May 30.

The course, which is tuition-free, is being held through the cooperation of Illinois Institute of Technology and the Chicago Chapter of the American Foundrymen's Association, and is being over-written by the U. S. Office of Education through its Engineering Science and Management War Training Program.

The course covers subjects such as iron carbon diagram, effects of alloys, graphite formation, heat treatment and testing methods. It is of 16 weeks duration, two evenings per week. Twenty-four students, representing 22 Chicago foundries, all of whom are members of the American Foundrymen's Association, are enrolled in the course, which has been so successful that it will be repeated beginning in October.

The class includes operation supervisors, production control men, foremen and superintendents. The instructor is Charles F. Walton, metallurgist, Association of Manufacturers of Chilled Car Wheels, who is thoroughly conversant with the subject.

One evening each week is devoted to lectures, while the second evening is spent in the laboratories, where such physical properties as tensile, compressive, and transverse strengths, deflection, impact resistance and hardness are studied, as well as the effect of miscrostructure on those properties. Students prepare and test their own specimens.

At the end of the course, each student will be required to make a complete report on an iron cast in his own plant. The report will include a complete investigation of the iron, including physical tests and photomicrographs of the structure.

Northern California Builds Chapter Spirit

KEEPING up member enthusiasm and interest through frequent bulletins, an important phase of chapter activities, is well exemplified in the work of the Northern California Chapter. Like several other chapters of A.F.A., the Northern California Chapter provides members with a folder in which to file all Association bulletins, and also distributes a complete roster of all members.

This roster also contains information on all officers and directors, history of the chapter, foundry equipment and supply firms, and lists of all foundries and pattern shops in the territory. Under the direction of Chapter Chairman H. A. Bossi, H. C. Macaulay Foundry Co., Berkeley, the activities of the Pacific Coast group are called to members' attention frequently by Secretary-Treasurer Geo. L. Kennard, Northern California Foundrymen's Institute, San Francisco, and every effort is made, with considerable success, to turn out a large group for each regular monthly meeting.

Manhattan Rubber Mfg. Div. of Raybestos-Manhattan Inc., Passaic, N. J., has been awarded 1st prize for the best business paper advertising campaign, for the third consecutive year. The award was made by the National Advertising Agency Network, and the Manhattan firm also won 2nd place award in the employee relations section.

As the result of an article on "Secondary Aluminum Sand Castings" by W. E. Martin, Sperry Gyroscope Co., correspondence developed between the Sperry company and the Enfield Rolling Mills, England, was sent as a matter of interest to A.F.A. headquarters. From the data thus obtained the following article was prepared by the A.F.A. staff and approved by Mr. Martin, whose original article appeared in the July, 1942 issue of "American Foundryman."

Similar British and American Secondary Aluminum Alloys are Compared

FOUNDRIES in England were using secondary aluminum alloys nearly two years before the use of virgin aluminum in the United States was restricted. Consequently, they have developed and standardized several secondary aluminum alloys which can be made from the type of scrap which is available.

In general, specifications for secondary alloys permit a greater amount of impurities than do specifications for virgin alloys. The official British wartime specifications for five secondary aluminum alloys used in England are given in Table 1.

The first listed alloy, DTD. 424, has been produced in considerable quantities since the outbreak of the war, and was standardized by the British Air Ministry in January, 1940. It is used for all methods of casting.

A study of a similar alloy for sand casting was undertaken by the Sperry Gyroscope Co. Materials Laboratory in January, 1942, and has been described by W. E. Martin.* As a result of this study, the laboratory set chemical and physical limits for a secondary alloy which it called Alloy No. 18. The chemical limits were modified at a later date.

In Table 2, the present limits for Alloy No. 18 are listed, along with the official specifications for the British DTD. 424 alloy.

In general, British and American practices for producing DTD. 424 and Alloy No. 18 castings are quite similar. Both emphasize the importance of not overheating the alloy, adequately feeding all heavy sections, using runners of large cross-section, and generously incorporating chills in the mold.

From 700 to 750°C. (1292 to 1382°F.) is the pouring range recommended. Heavy risers and a sufficient number of chills counteract the high shrinkage tendency of the alloy. Gating and risering similar to that used for "Y" alloy castings will usually prove satisfactory for DTD. 424 and Alloy No. 18 castings.

The original limits on silicon in Alloy No. 18 specified a maximum of 4.5 per cent silicon. Since then, the maximum limit has been increased to 6.0 per cent, which agrees with the British specification.

The original limits on magnesium in Alloy No. 18 specified a maximum of 0.10 per cent. This has since been reduced to 0.05 per cent. American smelters have been able to consistently reduce magnesium from 0.4 to less than 0.05 per cent. The lower magnesium content makes it possible to produce metal averaging 17,000 psi. yield strength, 28,000 psi. tensile strength, and 2 per cent

*W. E. Martin, *"Secondary Aluminum for Sand Castings,"* American Foundryman, vol. 4, No. 7, July, 1942, pp. 2-8.

Table I

Official British Specifications for Secondary Aluminum Alloys

	ALLOY				
	DTD. 424	*LAC. 112*	*DTD. 428*	*LAC. 10*	*LAC. 113A*
Chemical Composition:					
Silicon, per cent	3.0-6.0	7.0-13.0	2.0-4.0	Less than 0.6	Less than 1.3
Copper, per cent	2.0-4.0	2.0- 3.0	6.0-8.0	9.0-10.5	2.5-4.5
Magnesium, per cent	Less than 0.15	Less than 0.03	Less than 0.1	0.15-0.35	Less than 0.1
Zinc, per cent	Less than 0.2	Less than 1.2	2.0-4.0	Less than 0.1	9.0-13.0
Lead, per cent	Less than 0.05	.....	.....	Less than 0.1	.....
Nickel, per cent	Less than 0.35	Less than 1.5	.....	Less than 0.5	Less than 0.5
Iron, per cent	Less than 0.8	Less than 1.0	Less than 1.0	0.3-1.0	Less than 1.0
Manganese, per cent	Less than 0.7	Less than 0.5	.....	Less than 0.6	Less than 0.3
Titanium, per cent	Less than 0.2	.....	.....	.....	.....
Other impurities, per cent	.....	Total less than 0.5	Ni + Sn + Pb + Mn less than 1.0	Fe + Mn less than 1.4; Zn + Sn + Pb less than 0.2	Ni+Sn+Pb+Mn less than 1.0
Mechanical Properties:					
Elongation, per cent in 2 in.	2	.....	.....	.....	.....
Ultimate Tensile Strength, psi.	20,160	17,920	17,920	.....	20,160

elongation, and giving no trouble with breaking during straightening or machining.

Although the British specification calls for a maximum of 0.20 per cent zinc, foundrymen have learned that zinc up to 0.6 per cent is harmless, and special relaxations have been granted for the use of zinc up to 0.5 per cent in DTD. 424. This checks with the Alloy No. 18 maximum of 0.5 per cent.

By experience, British foundrymen have learned that the combined iron-and-manganese content should be kept below 1.3 per cent in order to avoid segregation and surface shrinkage.

British foundrymen have favored a small gas content because it decreased the tendency toward porosity caused by high solidification shrinkage. However, with the ultimate tensile strength requirement raised to 25,000 psi., elimination of all porosity is essential if the requirement is to be met.

The Sperry laboratory has not completed its work on sodium modification. In England, sodium modification is frequently used, for it is said to refine the free silicon in the alloy, reduce surface shrinkage, improve the color of the casting, and produce a closer fracture. The latter effect is probably a reflection of the refining action on the silicon.

No improvement in mechanical properties has been observed after sodium modification. Since much of the improvement resulting from modification is effected by action on the free silicon, sodium modification is most effective on alloys containing the maximum percentage of silicon permitted.

To Study Shrinkage of Bronze Alloys

THE Research Committee of the A.F.A. Brass and Bronze Division has undertaken a study on the Shrinkage of Alloys, under chairmanship of G. P. Halliwell, H. Kramer & Co., Chicago. Other members of the committee are: W. W. Edens, Ampco Metal, Inc., Milwaukee; A. K. Higgins, Allis-Chalmers Mfg. Co., Milwaukee, and N. A. Ziegler, Crane Co., Chicago.

Another Lady Elected Executive of Foundry

MISS Viola Schmidt was elected Treasurer and a member of the board of directors of Standard Brass Works, Milwaukee, August 7th, in recognition for 30 years of service with the company, according to announcement by Roy M. Jacobs, President. Thus Miss Schmidt becomes one of the few women occupying executive positions in the foundry industry.

Following action of the directors, Miss Schmidt was guest of honor at a party given at the summer home of Mr. Jacobs, near Oconomowoc, Wis. There she was presented with a handsome diamond wrist watch, having previously been awarded a block of stock in the firm. Other officials of Standard Brass Works present at the party were Burleigh Jacobs and Kenneth Jacobs, principal owners with Roy M. Jacobs, a National Director of A.F.A.

Miss Schmidt first joined the company in 1913 as Secretary to Kenneth W. Jacobs, Sr., then president. For a number of years she has held the position of office manager, in which capacity she was also in charge of priorities and the ordering of metals.

Miss Viola Schmidt

New OPA Malleable Iron Advisory Body

ORGANIZATION of a Malleable Iron Castings Industry Advisory Committee, for the purpose of consulting with OPA officials on pricing malleable iron castings, was announced July 27. At its first meeting, in Washington, the committee named R. R. Fauntleroy, Moline Malleable Iron Co., St. Charles, Ill., chairman, and Anthony Haswell, Dayton Malleable Iron Co., Dayton, Ohio, vice chairman.

Other committee members are: J. R. Redhead, Columbus Malleable Iron Co., Columbus, Ohio; Ralph N. Cole, Canton Malleable Iron Co., Canton, Ohio; Charles A. Gutenkunst, Jr., Milwaukee Malleable and Grey Iron Works, Milwaukee; W. H. Moriarty, National Malleable and Steel Castings Co., Cleveland; John Wagner, Wagner Malleable Iron Co., Decatur, Ill., and F. L. Engels, Oriskany Malleable Iron Co., Oriskany, N. Y.

Table 2

Specifications for Similar American and British Alloys

	Alloy No. 18	*D.T.D. 424 Alloy*
Chemical Composition:		
Copper, per cent	2.25-3.5	2.0-4.0
Silicon, per cent	3.25-6.0	3.0-6.0
Magnesium, per cent	0.05 Max.	Less than 0.15
Iron, per cent	0.9 Max.	Less than 0.8
Manganese, per cent	0.6 Max.	Less than 0.7
Nickel, per cent	0.4 Max.	Less than 0.35
Zinc, per cent	0.5 Max.	Less than 0.2
Other Impurities, per cent	0.5 Max.	Pb less than 0.05: Titanium less than 0.2
Mechanical Properties:		
Elongation, per cent in 2 in.	1.5 Minimum	2
Ultimate Tensile Strength, psi.	25,000	20,160

The committee and OPA officials discussed a proposed amendment to Maximum Price Regulation No. 241, which would permit malleable iron foundries to recover overtime costs on castings priced on a pre-base period basis.

Improves Castings Through Use of A.F.A. Standard Pattern Colors

By Roy M. Kinder

Supervisor of Foundries, Miehle Printing Press & Mfg. Co., Chicago

HERE are a few notes on results of our use of the A.F.A. system of pattern colors. I had wanted to put this system into effect some years ago, but found it difficult to change from patternmaker customs 50 years or more old to something new.

About 12 years ago, however, we started to use the A.F.A. color system. We obtained a number of the instruction cards from A.F.A., some of which we posted in our pattern shop, and also sent copies to our various foundries to be posted in conspicuous places. We then gave each patternmaker some red paint to be used according to the A.F.A. instruction cards on all new patterns made and all old patterns which were in for alterations or repairs.

In 1932 we called in all our patterns for storage, some of which had not been home for many years. Since that time, every pattern that has been sent out has gone through the pattern shop to be brought up to date (changes, repairs, colors, etc.), so that every Miehle pattern in use at our foundries now is painted in colors according to the A.F.A. standard color system.

This has become for us the natural way of painting patterns and it runs very smoothly.

Due to the number of types and sizes of printing presses that we manufacture, we have quite a large number of different patterns. We have about 15,000 live patterns in use and about 100,000 accumulated during the past 40 years, which are kept in storage available for repairs.

Previously, it kept me very busy instructing foundries on particular points for which to look out on patterns. On repeat orders, we had to rely on the foremen's and molder's memories, which were not entirely satisfactory and for which they could not be entirely blamed.

When we started using the colors, we found that there was an improvement in surfaces which were to be finished, due to changes in molding and gating, because the foundry foremen and molders had some information as to what the machine shop was going to do with the castings.

We believe that it has materially cut down our bad casting rejections. Our foundries are enthusiastic over the system, and have repeatedly complimented us on our patterns. Also, I believe that the patterns, because they look so much better when they go to the foundries, receive a little better care in handling.

To sum it all up, we are very much pleased with the results obtained and wish to thank the A.F.A. committee that produced this system for use by the industry.

We recommend this system to all patternmakers and pattern users. After they start using it, they will not want to change back again and they will find the results well worth the slight extra effort.

I would like to commend our Pattern Shop foreman, Edward Sabey, for his intelligent and willing co-operation in making this idea work and also our group of foundries for their co-operation in molding and casting according to the information furnished by the colored patterns.

Caterpillar Graduates Feted at Plant Dinner

MORE than 100 of the graduates who completed the foundryman, patternmaker and other training courses given by the Caterpillar Tractor Co., Peoria, Ill., since January, 1943, attended a recent plant graduation dinner.

Toastmaster was M. J. Gregory, factory manager, Foundry Division, who also awarded diplomas to foundry graduates. Speakers included L. B. Neumiller, president; James R. Murno, general factory manager, and L. J. Fletcher, director of training for the company.

Neal B. Hamilton, one of the graduates, was the winner of the 1942 A.F.A. national apprentice contest in gray iron molding.

Information Wanted—on Papers for 1944 Foundry Convention!

ATTENTION all members of A.F.A.! If you are planning a paper to present at the 1944 Foundry Convention, please *write at once* to A.F.A. headquarters, 222 W. Adams St., Chicago, giving information as to the subject you desire to submit to the Program Committee. This information is needed as early as possible, for inclusion of *your* paper in the program.

The Association is especially anxious to receive papers on practical subjects for the popular shop course sessions. Other acceptable subjects might deal with conditions in modern foundries in relation to substitutions for critical materials, and ways and means to circumvent wartime shortages.

Members also are invited to suggest topics which they feel should be covered by papers for the various sessions, listing names of men whom they believe capable of preparing such manuscripts.

Your cooperation and suggestions are invited!

New Association Members

In spite of midsummer heat and "vacationists," 68 new members were added to the A.F.A. rolls by 18 of our energetic chapter membership committees. Especially interesting, too, is interest shown in American foundry activities from "Down Under" . . . nine new Australian memberships, including four Company memberships. Also, continuing the excellent record of last month, nine more American foundry firms converted their Company memberships to the Sustaining class.

(July 16 to August 15, 1943)

Conversions

Sustaining from Company

Buckeye Steel Castings Co., Columbus, Ohio (F. H. Bonnet, 2nd Vice Pres. and Works Mgr.)
Cadillac Malleable Iron Co., Cadillac, Mich. (R. J. Teetor, Pres.)
A. W. Cadman Mfg. Co., Pittsburgh (A. M. Cadman, President)
Crouse-Hinds Co., Syracuse, N. Y. (E. G. White, Plant Engineer)
Dayton Foundry, Inc., Hollydale, Calif. (B. M. Campbell, Foundry Supt.)
Hershey Machine & Foundry Co., Manheim, Pa. (W. T. Sheffield, Foundry Supt.)
Lehigh Foundries, Inc., Easton, Pa. (Frank E. Shumann, President)
Milwaukee Chaplet & Mfg. Co., Milwaukee (Paul F. Rice, President)
Rundle Mfg. Co., Milwaukee (M. A. Dantzler, Plant Mgr.)

Company from Personal

Advance Aluminum & Brass Co., Los Angeles (Robt. R. Haley, Owner)
Goebig Mineral Supply Co., Chicago (Harry F. Goebig)

Birmingham Chapter

L. S. Acheson, Acheson Foundry & Machine Works, Chattanooga, Tenn.

Chicago Chapter

James Gammie, Asst. General Foreman, Pattern Dept., American Steel Foundries, Indiana Harbor, Ind.
W. G. Greenlee, Clerk, Greenlee Foundry Co., Chicago.
A. D. Lynch, Personnel Mgr., Hammond Brass Works, Hammond, Ind.

Cincinnati District Chapter

William T. Bryan, Metallurgical Engineer, The Duriron Co., Dayton, Ohio.
Dr. Theodore E. Field, Dir. of Research, Corhart Refractories Co., Louisville, Ky.
Wm. Grueneberg, Willard Bronze Co., Cincinnati.
George R. Hopping, Asst. Metallurgist, Wright Aeronautical Corp., Cincinnati.
Geo. R. Long, Manager, Mat. & Proc. Eng., Frigidaire Div., General Motors Corp., Dayton, Ohio.

Detroit Chapter

Robert J. Bugin, Indust. Engr., Aluminum Co. of America, Detroit.
Walter G. Patton, Technical Publications, Climax Molybdenum Co., Detroit.

Eastern Canada and Newfoundland Chapter

E. R. Gurney, Electric Steels, Ltd., Cap de la Madeleine, Que.

Metropolitan Chapter

William Brown Alexander, Service Engr., Bakelite Corp., New York.
George J. Behrendt, Asst. Mgr., Eastern Malleable Iron Co., Naugatuck, Conn.
***Eastern Malleable Iron Co., Naugatuck (T. Rice Davis, Mgr. Dir.)**
John G. Hughes, Research Engr., Eastern Malleable Iron Co., Naugatuck.
Paul V. Johnson, Asst. Supt., Eastern Malleable Iron Co., Naugatuck.
L. Richard Spann, Research Engr., Eastern Malleable Iron Co., Naugatuck.
Geo. F. Watson, Asst. Chief Chemist, American Brake Shoe & Foundry Co., Mahwah, N. J.

*Company Members.

Michiana Chapter

C. M. Brooks, Supt., Mathieu & Sons Foundry Co., Bridgman, Mich.
Arthur C. Mathieu, Plant Mgr., Mathieu & Sons Foundry Co., Bridgman, Mich.

Northeastern Ohio Chapter

John Budd, National Aluminum Cylinder Head Co., Cleveland.
R. C. Hamburger, General Supt., Eberhard Mfg. Co. Div., Eastern Malleable Iron Co., Cleveland.
J. R. Wills, Foundry Supt., Eberhard Mfg. Co. Div., Eastern Malleable Iron Co., Cleveland.

Northern California Chapter

Henry R. Daird, Machine Shop Foreman, Enterprise Engine & Foundry Co., Richmond, Calif.
Cecil Victor Harper, Sub Base Navy No. 128, San Francisco.
Henry Thomas, Coreroom Foreman, Enterprise Engine & Foundry Co., Richmond.

Northern Illinois-Southern Wisconsin Chapter

R. King, Cleaning Room Foreman, Beloit Iron Works, Beloit, Wis.

Ontario Chapter

J. C. Sturrock, Foundry Supt., Heaps Engineering (1940) Ltd., New Westminster, B. C.
***Westland Iron and Steel Foundries Ltd., Vancouver, B. C. (H. J. Turney)**

Philadelphia Chapter

***Bendix Aviation Corp., Philadelphia (S. S. Kingsbury, Chief Metallurgist)**
Walter S. Giele, Proprietor, Walter Giele Co., Lebanon, Pa.

Quad-City Chapter

James Carl Erickson, Metallurgist, Deere & Co., Moline, Ill.
Albert H. Rauch, Metallurgist, Deere & Co., Moline.
F. L. Willis, Brass Foundry Co., Peoria, Ill.

Southern California Chapter

***Almquist Bros. & Viets Co., Los Angeles (Richard H. Hughes, Manager, Abrasive Div.)**
***Bohn Aluminum & Brass Corp., Gardena, Calif. (Orville McGlothin, Foundry Supt.)**
C. E. Beckett, Sales & Service Engr., Gladding McBean & Co., Los Angeles.
***Federated Metals Div., American Smelting & Refining Co., Los Angeles (Glenn V. Ballard, Sales Mgr.)**
Harry J. Henry, Sales Repr., Federated Metals Div., American Smelting & Refining Co., Los Angeles.
Robert H. Hiles, Sales Repr., Federated Metals Div., American Smelting & Refining Co., Los Angeles.
Franz C. Oharek, Molder, Mechanical Foundries, Inc., Vernon, Calif.
Frank Parker, Sales Repr., Federated Metals Div., Aemrican Smelting & Refining Co., Los Angeles.
Donald E. Tobias, Apprentice Patternmaker, Mechanical Foundries, Inc., Los Angeles.

Toledo Chapter

Walter E. Drager, Plant Engineer, Bunting Brass & Bronze Co., Toledo, Ohio.
William F. Erler, Partner, Modern Pattern Works, Toledo.

Twin City Chapter

James Howitt Anderson, Metallurgist, Diamond Iron Works, Minneapolis.

Western New York Chapter

J. G. Buehmann, Symington Gould Corp, Depew, N. Y.
William D. Mathers, Plant Metallurgist, American Magnesium Corp., Buffalo, N. Y.
D. P. Murphy, Symington Gould Corp., Depew.

Wisconsin Chapter

Clayton D. Berry, Metallurgist, Sivyer Steel Casting Co., Milwaukee.
Ervin Dublinski, Supt., Mid-City Foundry Co., Milwaukee.

Outside of Chapter

*Australian Optical Co. Ltd., Sydney, Australia (A. B. Berry)
Alexander Boyes, Technical Asst. to Supt. of Foundries, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, England.
A. Carmichael, Burwood, Sydney, Australia.
S. Gazzard, Dundas, Sydney, Australia.
Michael M. Hallett, Chief Chemist & Metallurgist, Sheepbridge Stokes Centrifugal Castings Co. Ltd., Chesterfield, England.
Lt. Marshall C. Harmon, Bunkie, La.
*Holmfirth Foundry Co., Woolloomooloo, Sydney, Australia (R. Hardingham)
William James Hopkins, Asst. Foundry Mgr., Midland Motor Cylinder Co. Ltd., Smethwick, Staffs, England.
Jay Klein, Northern Indiana Brass Co. of Texas, Inc., Nacogdoches, Texas.
V. Meyer, Undercliffe, Sydney, Australia.
A. H. Penhall, Port Melbourne, Victoria, Australia.
*Queensland Machinery Co., Brisbane, Queensland, Australia (A. E. Goldsmith)
Leslie M. Shaw, Instructor, Kansas State College, Manhattan, Kan.
*Sklenar Patent Melting Furnace Div., Lempco Products, Inc., Bedford, Ohio (W. F. Sklenar, Technical Dir.)
A. M. Tennant, Melbourne, Victoria, Australia.
*Messrs. Thomson & Scougall Ltd., Alexandria, Sydney, Australia (H. Scougall)

Tool Steel Scrap Vital to War Effort

THE importance of salvaging steel borings and turnings from manufacturing and fabricating operations, for use in the production of simple carbons and alloy steels, is indicated in directives issued by W.P.B., making it mandatory that such scrap must be properly identified and handled through processes which will keep it free from contamination.

The increased demand for tool and special alloy steels, for use in munitions and armaments and in the tools required to manufacture such items of war, has caused an acute shortage in tungsten, molybdenum and cobalt.

Since tool steel scrap is the secondary source of these strategic alloying elements for the production of tool steels, proper salvage is important. Tool steel scrap includes high-speed steel scrap, and all alloy steel scrap materials with a tungsten content of 1 per cent or more, or a molybdenum content of 1½ per cent or more, with or without cobalt. It appears on the market in the form of broken, obsolete and worn-out tools, machine shop millings and turnings and broken or obsolete industrial supplies and equipment.

V-221-10/27

Drawn for Office of War Information

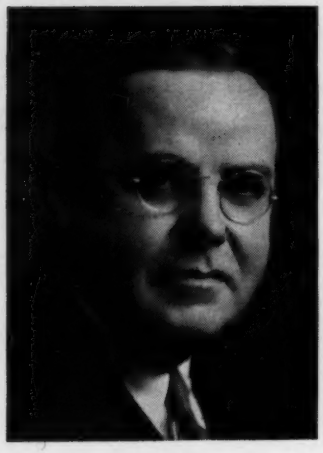
Urges Conservation of Foundry Safety Shoes

DESPITE the fact that it is possible for industrial employees to purchase safety shoes through a certificate of necessity, obtained from OPA, prolonging the life of shoes is a part of wartime conservation means. Recently the Hamilton Foundry & Machine Co., Hamilton, Ohio, distributed to foundry employees a leaflet containing simple suggestions on making safety shoes last longer.

The following condensed suggestions, from this leaflet, may be of interest to other foundry operators:

1. Never permit grease, grit and dirt to remain on shoes longer than necessary.
2. Let wet shoes dry slowly, soles in upward position. Never put shoes near a heater because sole leather should not be subject to any greater heat than your hand can endure.
3. If you work in wet places, apply weekly a little viscolized oil, tallow or beeswax, which will shed water.
4. Keep shoes in good repair, never waiting until soles and heels are worn thin.

CHAPTER OFFICERS



R. G. McElwee
Vanadium Corp. of America
Detroit
Vice-Chairman
Detroit Chapter

Walter F. Haggman
Foundries Specialties Co.
Huntington Park, Calif.
President
Southern California Chapter

R. W. Mattison
Mattison Machine Works
Rockford, Ill.
Vice-Chairman
Northern Illinois and Southern Wisconsin Chapter

R. L. Ogden
Stockham Pipe Fittings Co.
Birmingham, Ala.
Vice-Chairman
Birmingham Chapter

W. Carson Adams
Birmingham, Ala.
Chairman
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Hansell-Elcock Co.
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Vice-Chairman
Chicago Chapter

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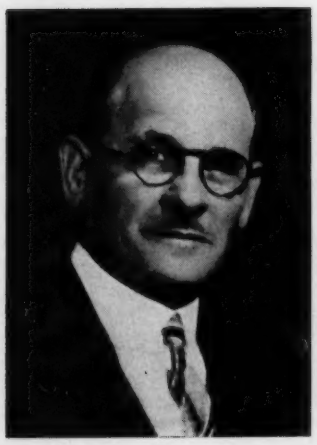
Baltimore, Md.
Secretary-Treasurer
Chesapeake Chapter

A. E. Jacobson
Grand Haven Brass Foundry
Grand Haven, Mich.
Vice-Chairman
Western Michigan Chapter



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Northern California Chapter

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Deere & Co.
Moline, Ill.
Vice-Chairman
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New York City
Vice-Chairman
Metropolitan Chapter

C. C. Kawin
Chas. C. Kawin Co.
Chicago
Treasurer
Chicago Chapter

Chapter Directory

Birmingham Chapter

(Established 1936)

Chairman—W. Carson Adams, Birmingham, Ala.
Vice-Chairman—R. L. Ogden, Stockham Pipe Fittings Co., Birmingham.
Secretary-Treasurer—Howard A. Nelson, Hill & Griffith Co., Birmingham.
Directors—Thomas Bellsnyder, Jefferson Foundry Co., Birmingham.
J. A. Bowers, American Cast Iron Pipe Co., Birmingham.
R. R. Deas, Jr., American Cast Iron Pipe Co., Birmingham.
R. A. Donaldson, Woodward Iron Co., Woodward, Ala.
J. M. Franklin, Central Foundry Co., Holt, Ala.
A. S. Holberg, Alabama Clay Products Co., Birmingham.
W. O. McMahon, Sloss-Sheffield Steel & Iron Co., Birmingham.
Wayne B. Nelson, Young & Vann Supply Co., Birmingham.
B. W. Norton, Republic Steel Corp., Birmingham.
E. A. Thomas, Thomas Foundries, Inc., Birmingham.
J. A. Woody, American Cast Iron Pipe Co., Birmingham.

Central Indiana Chapter

(Established 1939)

Chairman—Richard H. Bancroft, Perfect Circle Co., New Castle, Ind.
Vice-Chairman—Harold H. Lurie, Cummings Engine Co., Columbus, Ind.
Treasurer—William A. Zeunik, National Malleable & Steel Castings Co., Indianapolis.
Secretary—Robert Langsenkamp, Langsenkamp-Wheeler Brass Works, Inc., Indianapolis.
Directors—W. B. Ballantine, Haynes Stellite Co., Kokomo, Ind.
R. S. Davis, National Malleable & Steel Castings Co., Indianapolis.
Charles J. Gisler, C & G Foundry & Pattern Works, Indianapolis.
H. B. Harvey, Indiana Foundry Corp., Muncie, Ind.
J. P. Lentz, International Harvester Co., Indianapolis.
B. P. Mulcahy, Citizens Gas & Coke Utility, Indianapolis.
A. E. Murphy, Hickman Williams & Co., Indianapolis.
R. L. Palmer, Federal Foundry Co., Div. of American Stove Co., Indianapolis.
W. L. Seymour, Hoosier Iron Works, Kokomo, Ind.
Eugene Smith, Eugene Smith Sand Co., Evansville, Ind.
I. R. Wagner, Electric Steel Castings Co., Indianapolis.
Thomas P. Wolfla, Werner G. Smith Co., Indianapolis.

Central New York Chapter

(Established 1939)

Chairman—N. H. Boardman, Elmira Foundry Co., Inc., Elmira, N. Y.
Vice-Chairman—L. E. Hall, Syracuse Chilled Plow Co., Inc., Syracuse, N. Y.
Secretary—E. G. White, Crouse-Hinds Co., Syracuse, N. Y.
Treasurer—E. E. Hook, Dayton Oil Co., Syracuse, N. Y.
Directors—E. J. Bair, Sr., Utica Radiator Corp., Utica, N. Y.
Wm. D. Dunn, Oberdorfer Foundries, Inc., Syracuse.
H. S. Gulick, New York Air Brake Co., Watertown, N. Y.
M. G. Hollenbeck, Kennedy Valve Mfg. Co., Elmira.
R. A. Minnear, Ingersoll-Rand Co., Painted Post, N. Y.
J. R. Moynihan, Sibley College, Cornell University, Ithaca, N. Y.
I. F. Vergamini, Goulds Pumps, Inc., Seneca Falls, N. Y.
F. C. Wheeler, Kimman & Wheeler, Syracuse, N. Y.
Lloyd D. Wright, U. S. Radiator Corp., Geneva, N. Y.

Chesapeake Chapter

(Established 1940)

Chairman—R. T. Covington, American Hammered Piston Ring Div., Koppers Co., Baltimore, Md.
Vice-Chairman—H. S. Malsberger, American Chain & Cable Co., Inc., York, Pa.
Secretary-Treasurer—L. H. Denton, Baltimore Association of Commerce, Baltimore.
Directors—Earl J. Bush, U. S. Navy Yard, Washington, D. C.
J. E. Crown, U. S. Navy Yard, Washington, D. C.
J. W. Greenstreet, Maryland Car Wheel Co., Baltimore.
E. W. Horlebein, Gibson & Kirk Co., Baltimore.
H. A. Horner, Frick Co., Inc., Waynesboro, Pa.
Wallace W. Levi, Lynchburg Foundry Co., Radford, Va.
J. C. Pendleton, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.
Howard F. Taylor, Naval Research Laboratories, Anacostia, Washington, D. C.

Chicago Chapter

(Established 1934)

Chairman—M. F. Becker, Whiting Corp., Harvey, Ill.
Vice-Chairman—A. S. Klopf, Hansell-Elcock Co., Chicago.
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Treasurer—C. C. Kawin, Chas. C. Kawin Co., Chicago.
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W. L. Hartley, Link-Belt Co., Chicago.
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John W. Porter, American Steel Foundries, East Chicago, Ind.
H. K. Swanson, Swanson Pattern & Model Works, East Chicago, Ind.
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Cincinnati Chapter

(Established 1939)

Chairman—Edward H. King, Hill & Griffith Co., Cincinnati.
Vice-Chairman—Wm. A. Rengering, Cincinnati Milling Machine Co., Oakley, Cincinnati.
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Treasurer—Wm. J. Love, Jr., The Lunkenheimer Co., Cincinnati.

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W. J. Buvinger, Buckeye Foundry Co., Cincinnati.
Wm. A. Gilbert, Jr., Buckeye Foundry Co., Cincinnati.
Charles R. Hilb, H. Kramer & Co., Cnicinnati.
Edw. H. King, Hill & Griffith Co., Cincinnati.
David L. Longeuville, Wright Aeronautical Corp., Cincinnati.
W. J. Love., Jr., The Lunkenheimer Co., Cincinnati.
Martin F. Milligan, The Lunkenheimer Co., Cincinnati.
Wm. A. Rengering, Cincinnati Milling Machine Co., Oakley, Cincinnati.
Jos. S. Schumacher, Cincinnati Milling Machine Co., Oakley, Cincinnati.
Geo. S. Twachtman, Chris Erhart Foundry & Machine Co., Cincinnati.

Detroit Chapter

(Established 1935)

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Glenn Coley, Detroit Edison Co., Detroit.
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F. A. Jensen, National Engineering Co., Detroit.
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O. E. Sundstedt, General Foundry & Mfg. Co., Flint, Mich.

Eastern Canada and Newfoundland Chapter

(Established 1942)

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Chairman—E. N. Delahunt, Warden King, Ltd., Montreal.
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Metropolitan Chapter

(Established 1938)

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A. McIntosh, Wright Aeronautical Corp., Paterson, N. J.
W. G. Reichert, W. G. Reichert Engineering Co., Newark, N. J.
W. D. Schoonmaker, General Bronze Corp., Corona, Long Island, N. Y.
W. C. Schulte, Curtiss Propeller Div., Curtiss Wright Corp., Caldwell, N. J.
H. C. Seidel, Penn-Rillton Co., New York.
H. L. Ullrich, Sacks-Barlow Foundry, Newark, N. J.
K. V. Wheeler, Jr., American Steel Castings Co., Newark, N. J.

Michiana Chapter

(Established 1940)

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C. O. Hiler, Bantam Bearings Corp., South Bend, Ind.
W. V. Johnson, Oliver Farm Equipment Co., South Bend, Ind.
Wm. F. Lange, Casting Service Corp., La Porte, Ind.
John McAntee, Covel Mfg. Co., Benton Harbor, Mich.
J. H. Miller, Josam Products Foundry Co., Michigan City, Ind.
Carl W. Petersen, Dodge Mfg. Corp., Mishawaka, Ind.
V. S. Spears, American Foundry Equipment Co., Mishawaka, Ind.
Leonard F. Tucker, City Pattern Works, South Bend.
William C. Wine, Sibley Machine & Foundry Co., South Bend, Ind.

Northeastern Ohio Chapter

(Established 1935)

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Secretary—J. M. Lathrop, *The Foundry*, Cleveland.
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Frank J. Dost, Sterling Foundry Co., Wellington.
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J. B. Heisler, A. C. Williams Co., Ravenna, Ohio.
James W. Horan, Sandusky, Ohio.
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H. F. Roberts, Williams & Co., Inc., Cleveland.
M. G. Thomas, City Foundry Co., Cleveland.
Henry J. Trenkamp, Ohio Foundry Co., Cleveland.
A. J. Tuscany, Foundry Equipment Manufacturers Association, Cleveland.
J. J. Witenhafer, Lake City Malleable Co., Cleveland.

Northern California Chapter

(Established 1935)

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John F. Driscoll, Rincon Foundry Co., San Francisco.
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Chas. Hoehn, Jr., Enterprise Engine & Foundry Co., San Francisco.
M. W. Hulse, General Metals Corp., Oakland.
A. R. Linn, Joshua Hendy Iron Works, Sunnyvale, Calif.
Fred A. Mainzer, Pacific Brass Foundry of San Francisco.
E. M. Welch, American Manganese Steel Div., American Brake Shoe & Foundry Co., Oakland.

Northern Illinois and Southern Wisconsin Chapter

(Established 1938)

Chairman—Roy G. Baysinger, Geo. D. Roper Corp., Rockford, Ill.
Vice-President—R. W. Mattison, Mattison Machine Works, Rockford, Ill.
Secretary—B. L. Baptist, Beloit Iron Works, Beloit, Wis.
Treasurer—G. J. Landstrom, Sundstrand Machine Tool Co., Rockford, Ill.
Directors—John R. Cochran, Sundstrand Machine Tool Co., Rockford, Ill.
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Emmet C. John, National Sewing Machine Co., Belvidere, Ill.
H. L. Klopf, Fairbanks Morse & Co., Beloit, Wis.
Howard W. Miner, Fairbanks Morse & Co., Beloit, Wis.
Geo. K. Minert, Gunite Foundries, Inc., Rockford, Ill.
P. A. Paulson, Gunite Foundries, Inc., Rockford, Ill.
Max J. Reuteler, Fairbanks Morse & Co., Beloit, Wis.
F. N. Rundquist, Beloit Castings Co., Beloit, Wis.

Ontario Chapter

(Established 1938)

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Vice-Chairman—Robert Robertson, International Harvester Co. of Canada, Ltd., Hamilton, Ont.
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Directors—T. D. Barnes, Wm. R. Barnes, Ltd., Hamilton, Ont.
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Jas. Dalby, Canada Metal Co., Ltd., Toronto.
G. O. Loach, Otis-Fensom Elevator Co., Ltd., Hamilton, Ont.
J. J. McFadyen, Galt Malleable Iron Co., Ltd., Galt, Ont.
L. B. Morris, Gurney Foundry Co., Ltd., Toronto.
W. W. Nobbs, Clare Bros. & Co., Ltd., Preston, Ont.
Theo. Tafel, Jr., Standard Sanitary & Dominion Radiator, Ltd., Toronto.
C. O. Williamson, Grinnel Co. of Canada, Ltd., Toronto.
J. A. Wotherspoon, Imperial Iron Corp., Ltd., St. Catherines, Ont.

Philadelphia Chapter

(Established 1935)

Chairman—B. H. Bartells, University of Pennsylvania, Philadelphia.
Vice-Chairman—Robert Latham, Bethlehem Steel Co., Bethlehem, Pa.
Secretary-Treasurer—W. B. Coleman, W. B. Coleman & Co., Philadelphia.
Directors—Geo. H. James, American Engineering Co., Philadelphia.
R. J. Keeley, Ajax Metal Co., Philadelphia.
J. W. March, Schneider Bowman Co., Inc., Philadelphia.
D. J. Peake, Florence Pipe Foundry & Machine Co., Florence, N. J.
J. M. Robb, Jr., Hickman, Williams & Co., Philadelphia.
Wm. S. Thomas, North Bros. Mfg. Co., Philadelphia.
E. C. Troy, Dodge Steel Co., Philadelphia.

Quad City Chapter

(Founded 1935)

Chairman—W. E. Jones, Ordnance Steel Foundry Co., Bettendorf, Iowa.
Vice-Chairman—R. E. Wilke, Deere & Co., Moline, Ill.
Secretary-Treasurer—H. L. Creps, Frank Foundries Corp., Moline, Ill.
Directors—P. T. Bancroft, Republic Coal & Coke Co., Moline, Ill.
C. S. Humphrey, C. S. Humphrey Co., Moline, Ill.
Haydn Laycock, F. B. Stevens, Inc., Peoria, Ill.
Martin Liedtke, International Harvester Co., Rock Island, Ill.
A. D. Matheson, French & Hecht, Inc., Davenport, Iowa.
Harry L. Mead, John Deere Harvester Works, East Moline, Ill.
A. H. Putnam, A. H. Putnam Co., Rock Island, Ill.
R. H. Swartz, Bettendorf Co., Davenport, Iowa.
C. E. Von Luhrte, Chicago Retort & Fire Brick Co., Davenport, Iowa.

St. Louis Chapter

(Established 1935)

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Vice-Chairman—E. E. Ballard, National Bearing Metals Co., St. Louis.
Secretary-Treasurer—J. H. Williamson, M. A. Bell Co., St. Louis.
Directors—Louis J. Desparois, Pickland, Mather & Co., St. Louis.
L. C. Farquhar, American Steel Foundries, East St. Louis.
Emil A. Goerger, City Pattern & Model Co., St. Louis.
H. Goodwin, Medart Co., St. Louis.
Walter E. Illig, Banner Iron Works, St. Louis.
Roy A. Jacobsen, Carondelet Foundry Co., St. Louis.
John W. Kelin, Federated Metals Div., American Smelting & Refining Co., St. Louis.
A. O. Nilles, Griffin Wheel Co., Kansas City, Kan.
Francis T. O'Hare, Central Brass & Aluminum Foundry Co., St. Louis.
Fred E. Riggan, Key Co., East St. Louis, Ill.
Joseph D. Walsh, Scullin Steel Co., St. Louis.
Harold Wiese, Midvale Mining & Mfg. Co., St. Louis.

Southern California Chapter

(Established 1937)

President—Walter F. Haggman, Foundry Specialties Co., Huntington Park, Calif.
Vice-President—W. D. Bailey, Jr., Westlectric Castings, Inc., East Los Angeles, Calif.
Secretary—E. M. Hagener, General Metals Corp., Los Angeles.
Treasurer—Robert R. Haley, Advance Aluminum & Brass Co., Los Angeles.
Directors—Earl Anderson, Enterprise Iron Works, Los Angeles.
F. W. Beick, Crown Pattern Works, Alhambra, Calif.
William H. DeVaney, Pomona Pump Co., Pomona, Calif.
Richard H. Hughes, Pacific Metals Co., Ltd., Los Angeles.
Edgar C. Hummel, Utility Electric Steel Foundry, Los Angeles.
J. Donald Locke, Long Beach Iron Works, Long Beach, Calif.
Chas. R. McGraw, Long Beach Brass Foundry, Long Beach, Calif.
Dominic Meaglia, American Foundry Co., Los Angeles.
A. H. Popperwell, Reliable Iron Foundry, Los Angeles.

Toledo Chapter

(Established 1941)

Chairman—R. T. Jansen, Industrial Steel Casting Div., Unitcast Corp., Toledo, Ohio.
Vice-Chairman—Wm. F. Erler, Modern Pattern Works, Toledo, Ohio.
Secretary-Treasurer—R. B. Bunting, Bunting Brass & Bronze Co., Toledo, Ohio.

Directors—W. C. Adler, Ohio Steel Foundry Co., Lima, Ohio.
R. L. Binney, Binney Castings Co., Toledo, Ohio.
C. F. Carson, National Supply Co., Toledo, Ohio.
Floyd F. Ensign, Ensign Foundry Co., Toledo, Ohio.
L. M. Long, Bunting Brass & Bronze Co., Toledo.
Norbert Mahoney, Maumee Malleable Castings Co., Toledo, Ohio.
Wm. A. O'Brien, Electric Auto-Lite Co., Fostoria, Ohio.
G. A. Rusk, Freeman Supply Co., Toledo, Ohio.

Twin City Chapter

(Established 1941)

Chairman—R. W. Bingham, American Hoist & Derrick Co., St. Paul, Minn.
Vice-Chairman—C. H. Anderson, Crown Iron Works Co., Minneapolis, Minn.
Secretary-Treasurer—Alexis Caswell, Manufacturers' Assn. of Minneapolis, Inc., Minneapolis, Minn.
Directors—Axel F. Carlstrom, Smith-Sharpe Co., Minneapolis.
I. F. Cheney, Griffin Wheel Co., St. Paul.
J. S. Garske, Progress Pattern & Foundry Co., St. Paul.
Fulton Holtby, University of Minnesota, Minneapolis.
R. W. Jones, Jr., St. Paul Foundry Co., St. Paul.
E. C. Madson, Andersen Foundry Co., Bayport, Minn.
J. F. Staver, Staver Foundry Co., Virginia, Minn.
A. H. Trapp, Minneapolis-Moline Power Implement Co., Minneapolis.
R. C. Wood, Minneapolis Electric Steel Castings Co., Minneapolis.

Western Michigan Chapter

(Established 1941)

Chairman—H. C. BeMent, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.
Vice-Chairman—A. E. Jacobson, Grand Haven Brass Foundry, Grand Haven, Mich.
Secretary—Charles H. Cousineau, West Michigan Steel Foundry Co., Muskegon, Mich.
Treasurer—Fred C. McCarthy, Wolverine Brass Co., Grand Rapids, Mich.
Directors—Max A. Amos, Standard Automotive Parts Co., Muskegon, Mich.
Jos. L. Brooks, Muskegon Piston Ring Co., Sparta.
Ralph A. Clark, Lakey Foundry & Machine Co., Muskegon, Mich.
C. M. Clover, Clover Foundry Co., Muskegon, Mich.
R. W. Hathaway, Federal Mogul Co., Greenville, Mich.
A. E. Jacobson, Grand Haven Brass Foundry, Grand Haven, Mich.
J. C. Jensen, Battle Creek Foundry Co., Battle Creek.
H. J. Krause, Newaygo Engineering Co., Newaygo, Mich.
H. N. Myers, Sealed Power Corp., Muskegon, Mich.
Don F. Seyferth, West Michigan Steel Foundry Co., Muskegon, Mich.

Western New York Chapter

(Established 1937)

Chairman—Frank E. Bates, Worthington Pump & Machinery Corp., Buffalo, N. Y.
Vice-Chairman—Reinhold D. Loesch, Lake Erie Foundry Co., Buffalo, N. Y.
Secretary—J. Ralph Turner, Queen City Sand & Supply Co., Buffalo, N. Y.
Treasurer—Martin W. Pohlman, Pohlman Foundry Co., Inc., Buffalo, N. Y.
Directors—Chas. O. Burgess, Union Carbide & Carbon Research Laboratories, Niagara Falls, N. Y.
Alfred A. Diebold, Atlas Steel Casting Co., Buffalo, N. Y.
Elliot R. Jones, Lumen Bearing Co., Buffalo, N. Y.
Everett E. LeViness, Combined Supply & Equipment Co., Inc., Buffalo, N. Y.
Edw. P. Meade, Sargent & Greenleaf, Inc., Rochester, N. Y.
R. T. Melville, Hanna Furnace Corp., Buffalo, N. Y.
Martin J. O'Brien, Symington-Gould Corp., Depew, N. Y.
Ralph T. Rycroft, Jewell Alloy & Malleable Co., Inc., Buffalo, N. Y.
Henry F. Sproull, A. P. Green Fire Brick Co., Buffalo, N. Y.
Jas. L. Yates, Worthington Pump & Machinery Corp, Buffalo, N. Y.

Western Wisconsin Chapter

(Established 1935)

President—George K. Dreher, Ampco Metal, Inc., Milwaukee.
Vice-President—Harry E. Ladwig, Allis-Chalmers Mfg. Co., Milwaukee.
Secretary—John Bing, A. P. Green Fire Brick Co., Milwaukee.
Treasurer—Richard F. Jordan, Sterling Wheelbarrow Co., Milwaukee.
Directors—R. J. Anderson, Belle City Malleable Iron Co., Racine, Wis.
Wm. A. Hambley, Allis-Chalmers Mfg. Co., Milwaukee.
Emil B. Hansen, Wisconsin Appleton Co., South Milwaukee, Wis.
L. D. Harkrider, General Malleable Co., Waukesha, Wis.
Paul E. Riedel, Production Pattern Co., Milwaukee.
Oscar E. Woehlke, Spring City Foundry Div., Grede Foundries, Inc., Milwaukee.
Robert C. Woodward, Bucyrus, Erie Co., So. Milwaukee.

University of Minnesota Student Chapter

(Established 1941)

President—John A. Haack.
Secretary—Eugene R. Shelley.
Treasurer—Stanley C. Tinquist.

Aids Argentina Set Cast Steel Standards

THE A.F.A. Steel Division Advisory Committee, of which T. N. Armstrong, International Nickel Co., New York, is Chairman, is cooperating with the American Standards Association in assisting South American countries to set their own standards for cast products. Recently the draft of an Argentina standard for cast steel was sent to this country through the Inter-American department of A.S.A. for American comment and suggestion, through the courtesy of Alberto Magno-Rodrigues of the Inter-American department.

The proposed standard, IRAM Standard 527-P Cast Steel, was drafted by the Instituto Argentino de Racionalizacion de Materiales, the official standard-making body of Argentina. By giving American industry the opportunity to comment, a very real contribution to Inter-American relations is anticipated. Local standards thus may be formulated which will best serve Latin American interests without being detrimental to trade relations with this country.

The Inter-American department of A.S.A. was established recently in New York with support of both Government and industry, and maintains field representation in Latin American countries where standard bodies have been created.

Among the latest firms to receive the Army-Navy "E" Award is the Lufkin Foundry & Machine Co., at Lufkin, Texas. Public recognition for excellence in war production work was made June 24, at a plant presentation program.

CHAPTER ACTIVITIES *News*

Milwaukee Malleable Club Stages Picnic

By Jos. G. Kropka, Secretary
Chain Belt Co., Milwaukee

COMPLETING its acitvities for the year, the Milwaukee Malleable Club, Milwaukee, Wis., staged its annual picnic at the Meadowbrook Country Club, Racine, Wis., on June 19, featuring a day of perfect weather and welcome relaxation. Golf and other outdoor sports took up the day, with a chicken dinner served in early evening.

The outing was considered one of the most notable ever held by the group, with the lion's share of the credit for arrangements going to J. Bissett, M. Harder and J. Molenda.

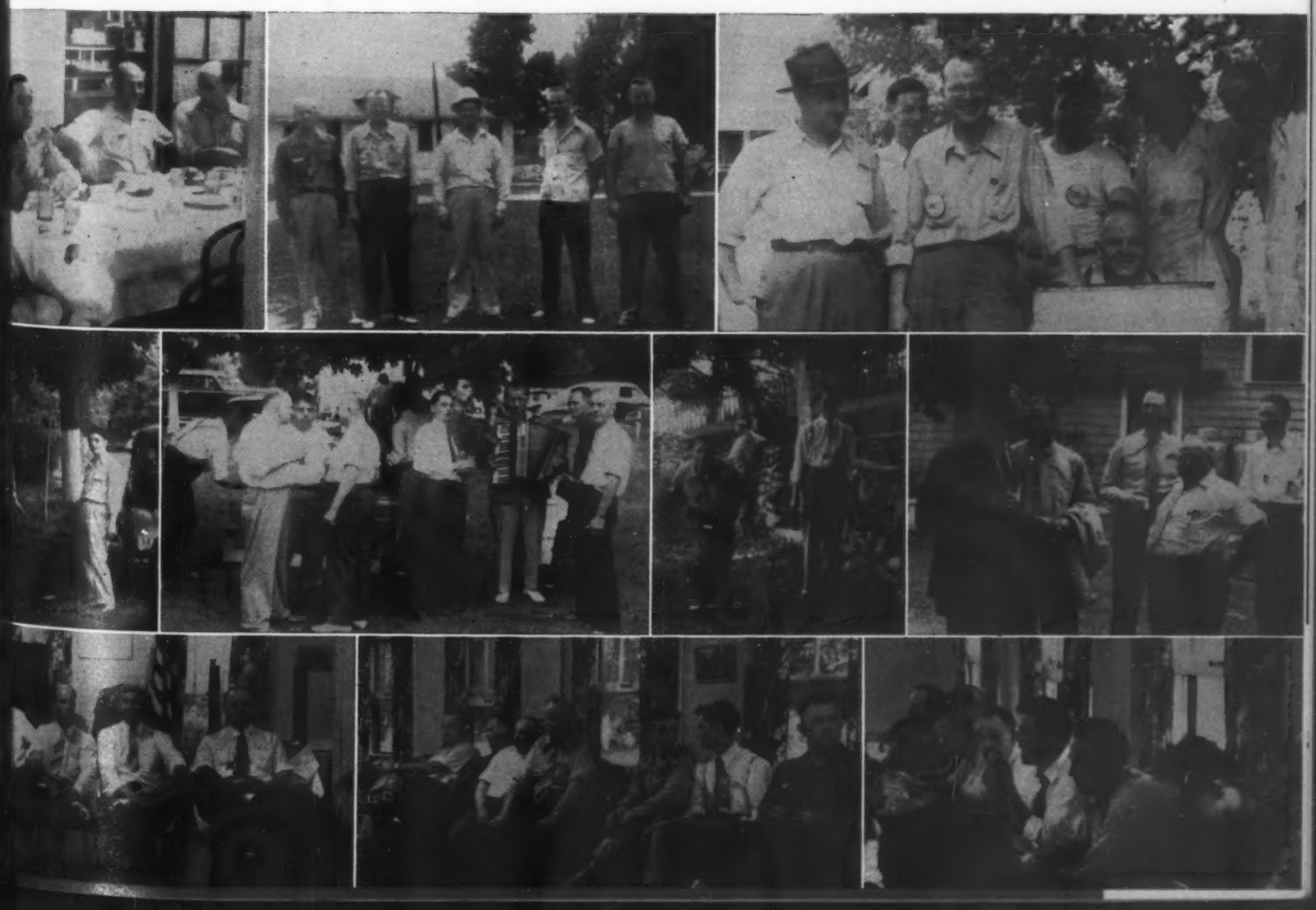
Texas to Hold First Meeting October 29

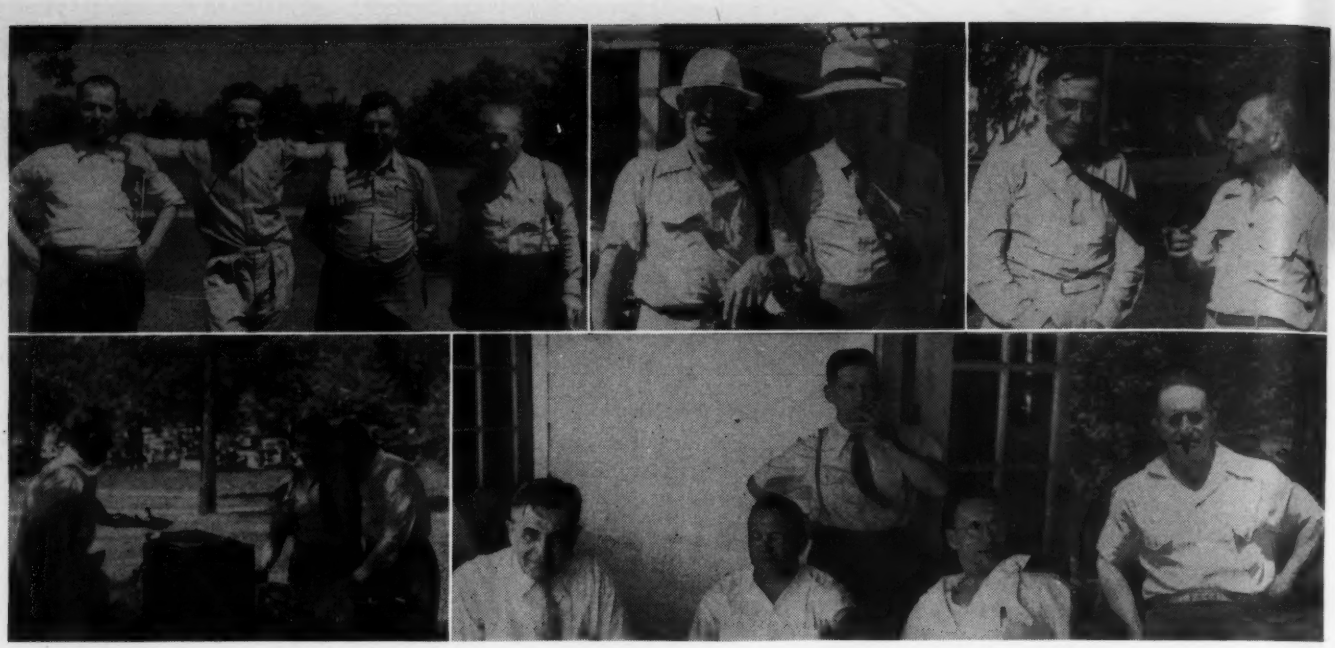
THE first meeting of the new Texas foundry group, organization of which was initiated at the St. Louis Foundry Congress, will be held in Houston on October 29, according to announcement by the committee in charge. R. G. McElwee, Vanadium Corp. of America, Detroit, will be the guest speaker, and it is expected that the meeting will be repeated a day or two later at either Dallas or Fort Worth.

F. M. Wittlinger, Texas Electric Steel Co., Houston, is acting as Chairman of the committee making the arrangements. J. O. Klein, Lufkin Foundry & Machine Co., Lufkin, is Vice-Chairman; H. L. Wren, Barada & Page, Houston, Secretary. Other members of the committee, all of Houston except one, are as follows:

A. S. Cramer, Dickson Gun Plant; L. H. August, Hughes Tool Co.; T. J. Russell, Service Pattern Works; H. F. Elmer, Dedman Foundry & Machine

These scenes of recreation and good fellowship give credence to the report that the first Annual Meeting of the Toledo Chapter, held at The Towers, Irish Hills, Mich., July 10, was a huge success.
(Photos by Sterling Farmer, Sand Products Co.)





(Photos courtesy John Bing, A. P. Green Fire Brick Co.)

Members and guests of the Milwaukee Malleable Club enjoying a day of recreation and surcease from care of war production work at the Wisconsin club's annual outing, June 19, near Racine, Wis.

Co.; W. A. Raymond, Houston Foundry & Machine Co.; Wm. Bryant, Jr., Oil City Brass Works, Beaumont.

All foundrymen in the territory are being invited to attend the initial meetings, and plans are to hold further meetings later on. As reported in the August issue of *American Foundryman,* one of the subjects discussed at the informal meeting in St. Louis was the possibility of eventually forming a Texas chapter of A.F.A., the first in the Southwest.

Record Attendance at Milwaukee Golf Meeting

By Darold W. Thiem, Chairman
Publicity Committee
Pollard Oil Products Co.

IT RAINED in Milwaukee July 16, but intermittent downpour failed to dampen the enthusiasm of contestants in the Wisconsin Chapter's annual Golf and Stag meeting, held at the nearby Ozaukee Country Club.

A steak dinner climaxed the activities of the day, and a record crowd of 667 members and guests attended. Chapter President George K. Dreher, Ampco Metal, Inc., Milwaukee, after a few introductory remarks, congratulated the chairman of the golf party, Joe Risney, International Molding Machine Co., Chicago, for the arrangements.

Assisted by members of his committee, Mr. Risney distributed awards to the golf champs of the day, door prizes consisting of a large number of defense bonds. A well planned floor show served as finale to a thoroughly enjoyable meeting.

Museum Foundry in Active War Program

SINCE Pearl Harbor the foundry section of the Museum of Science and Industry has become more than a place of learning, where the progressive development of gray iron castings is exhibited. Soon after that eventful December 7, the museum's operating gray iron foundry, under the direction of men with years of experience, became a sub-contractor in war production work, and today it is recognized for its practical worth as well as educational merits.

The Chicago Chapter of American Foundrymen's Association played a large part in establishing and equipping the foundry exhibit of the museum which is visited by one million patrons annually, so that increasingly more consumers are becoming aware of the importance and potentialities of gray iron castings. Since then the chapter has continued to serve in an advisory capacity.

Another contribution which the exhibit renders to the war effort is the training of members of the armed forces. Among those making daily visits to the museum are Navy men from Chicago's Naval Training Center, their program of training to be machinists' mates including lectures on important phases of the metal casting process.

Jas. G. Goldie, Cleveland Trade School, Chairman of the Northeastern Ohio Chapter, presenting the chapter's thanks and prize to Michael Slivka, Hill-Acme Co., Cleveland, for winning 3d prize in Gray Iron Molding in the National A.F.A. Apprentice Contests.

July 2 marked the Twentieth Anniversary of the Naval Research Laboratory. Fitting ceremonies held on the institution's grounds at Anacostia, D. C., gave recognition to the accomplishments of the laboratory since it was founded in 1923.

Abstracts

NOTE: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Absenteeism

(See Management.)

Aluminum

WELDING. *"Welding Aluminum Alloys," Canadian Metals and Metallurgical Industries,* vol. 6, No. 7, July, 1943, pp. 32-34, 54. Taken from article by Dr. E. C. West, based on paper given to Manchester Section, Institute of Welding, and published in *Metallurgia,* April, 1943. Practically all light alloys can be welded, but not all light alloys can be welded with the same method. The method to be used depends upon the chemical composition and mechanical properties of the parent metal. Two considerations in the welding of aluminum alloys are the tendency for the metal to oxidize, and the high thermal and electrical conductivities of the metal. The oxides of both aluminum and magnesium melt at temperatures above the melting point of the base metals and do not dissolve in borax-base fluxes. Neither oxide is reduced by the welding flame or carbon arc. Gas welding has been used on many alloys, and generally it is done using a flux composed of alkali chlorides and fluorides. The fluorides tend to break up the oxide film on relatively pure aluminum alloys and permit the chlorine to react with the metal beneath the oxide film, loosening the film thereby. Less pure alloys tend to have a discontinuous oxide film, and for these the action of fluorides is less important. The alkali metals probably volatilize. Gas fluxing has been considered as a possibility, having the advantage of closely controlling the amount of flux used. Atomic hydrogen welding, heli-arc welding, and coated metallic arc welding processes all demand the use of a flux. The "Weibel" process, developed in Switzerland, holds considerable promise, but mechanical difficulties limit its use to straight seams which can be set up accurately on jigs for mass production. The use of spot welding has greatly increased in the last few years. The two most important considerations in its use are the fit and the surface condition of the parts before presentation to the welding machine. The surface should be clean and the parts to be welded should fit well enough so that the electrodes need not be used to bring badly mated parts together.

Brass and Bronze

DE-GRADING. *"Reports on Low-Tin and Tin-Free Bronzes and Brasses,"* Reports of Non-ferrous Sub-committee of the Technical Committee, *Paper No .753, Proceedings of the Institute of British Foundrymen,* vol. 35, 1941-42. This article, composed of three reports on low-tin copper-base alloys, was presented at the thirty-ninth annual general meeting of the Institute. Part I, "Silicon Bronzes as Casting Alloys," describes the specifications, mechanical properties, foundry technique, effects of scrap contamination, and welding methods for silicon bronze alloys. Part II, "Properties of Sand-Cast Low-Tin Content Gunmetals and Brasses," by F. Hudson, gives the mechanical properties and production and corrosion data on low tin content gun metals and cast brasses (types A and B). Part III, "The Founding of Types A and B Brasses," gives the foundry methods used for the production of these alloys. Discussion follows these reports.

Cast Iron

(See Gray Iron.)

BLACKING DEFECTS. *"Ingot Mould Defects Caused by Blacking,"* W. S. Williams, *Iron and Steel,* vol. 16, No. 12, July, 1943, pp. 471, 482. The use of excessive blacking on sand molds used to produce ingot molds caused three types of defects which combined to lower the life of the ingot mold—the exterior of the mold was marked with raised flat areas; the inside of the mold was perforated; and the bases of processed molds were unaccountably soft. After studying the defects and experimenting with the blacking, it was concluded that the excess of carbon in a finely divided state was trapped in the iron as very small inclusions, thus reducing mold life.

Centrifugal Casting

STEEL. *(See Steel.)*

Cleaning

HYDRO-METHODS. *"The Wet Process of Core Removal, Casting Cleaning and Sand Reclamation,"* R. Webster, *Paper No. 759, Proceedings of the Institute of British Foundrymen,* vol. 35, 1941-1942. Paper presented before the Birmingham Branch of the Institute. The author describes early and partially successful attempts to use water in cleaning castings. The first American attempts utilized water under low pressure. Somewhat later attempts made by German foundries utilized water under high pressure. In both cases the water nozzles were mounted in either a fixed or a limited-motion position. A later American attempt used nozzles mounted on overhead cranes to direct a water stream to knock out large cores from locomotive bed frames. Finally an American method made use of a wet sand-blasting system in which a high velocity stream of water and sand is directed against the casting. Nozzles with tungsten carbide liners were found to resist the abrasive action of the stream well enough to prove economical. The system permitted the recovery and grading of silica in the sand which is suitable for reuse in core mixes, facings, or synthetic molding sands. Casting surfaces are cleaned very well, and direct savings in time and tool life have resulted in machining castings thus cleaned. An outstanding advantage of the method is that no dust is produced.

Cores

CENTRIFUGAL CASTING. *(See Steel.)*

KNOCKOUT. *(See Cleaning.)*

Creep Resistance

STEEL. *(See Steel.)*

Creep Test

DATA. *(See High-Temperature Properties.)*

Cupola

BASIC CUPOLA PRACTICE. *"Basic Cupola Process for Desulphurization,"* E. S. Renshaw, *Foundry Trade Journal,* vol. 70, No. 1401, June 24, 1943, pp. 149-153. If a basic lining is used in the cupola, it is possible to charge sufficient limestone to produce a basic slag which will, under suitable conditions of cupola operation, remove the amount of sulphur ordinarily picked up by the metal from the coke and even reduce the sulphur content of the metal as charged. Stabilized dolomite was selected as the most satisfactory material for a basic cupola lining. The cupola used in experiments was fitted with a continuous tapping box which permitted a considerable amount of slag to accumulate in the well. Any furnace conditions which favor excessive oxidation should be avoided, as an excess of iron oxide will reduce the effectiveness of the basic slag. Basic cupola melting is now being used commercially.

Desulphurization

BASIC CUPOLA PRACTICE. *(See Cupola.)*

Ductility

ALLOY STEEL. *(See Steel.)*

Gray Iron

BASIC CUPOLA PRACTICE. *(See Cupola.)*

Gray Iron

PIG IRON. *"Charcoal Pig Iron,"* Ralph H. Sweetser, *Iron Age*, vol. 151, No. 26, pp. 43-47. Charcoal pig iron has always been regarded as slightly superior to coke or anthracite pig iron. Although no differences in chemical analysis are detected, charcoal irons test at higher tensile strength values. However, the graphite in charcoal pig iron has a finer structure, and the ferrite is more continuous. At the present time only four charcoal blast furnaces remain in operation in United States and Great Britain. Others have been shut down because of the depletion of charcoal sources.

WARTIME DEVELOPMENTS. *"Recent American Developments in Cast Iron,"* A. B. Everset, *Paper No. 762, Proceedings of the Institute of British Foundrymen*, vol. 35, 1941-1942. This paper was presented before the London Branch of the Institute. The author has done an excellent job in summarizing the trends of cast iron developments in America since Pearl Harbor, and has listed many of the best papers which presented these developments to American foundrymen. The author attempts to determine the value of some of the American developments to British who produce cast iron under somewhat different conditions and demands. Developments discussed by the author include better cupola control in an attempt to maintain greater uniformity of melting conditions and metal quality; the determining influence of graphite form and nature of the matrix on mechanical properties; heat treatments based on the S-curve technique to modify and control the matrix structure of cast iron; the use of alloying elements; flame hardening; data on less-studied properties such as high temperature fatigue and impact, and attempts to standardize testing methods and to classify cast iron according to its graphite structure. The author also cites the production of pearlitic malleable iron by short cycle annealing as being the outstanding recent development in the malleable iron field.

High-Temperature Properties

CREEP RESISTANCE. (*See Steel.*)

CREEP TESTS. *"Interpretation of Creep Test Data,"* P. G. McVetty, *1943 Preprint 41, American Society for Testing Materials*, 21 pp. This paper bases the interpretation of creep test data upon the establishment of relations among the four variables—temperature, stress, deformation, and time. Various factors affecting these relations are considered, particularly the effects of stress and temperature upon the deformation-time (creep) curve. Methods are suggested for determining the necessary duration of a test and for extrapolation from short to long times and from high to low stresses. Simple, practical interpolation and extrapolation methods are developed for the presentation of creep results in the form of tabulated data or charts covering any desired ranges of stress and temperature and using relatively few creep tests. These methods are adapted particularly to the correlation of data from various sources and the correction of preliminary estimates when more data become available. To illustrate the proposed method, creep curves from eight tests of a 35 per cent nickel, 19 per cent chromium heat-resisting alloy at three temperatures are given. From these are developed sample charts for guidance in the choice of working stresses and the comparison of materials. Since the purpose of the paper is to describe and illustrate a method of analysis rather than to give specific data on any material, the detailed information on chemical analysis, heat treatment, etc., usually required has been omitted.

CREEP TESTS. *"Hyperbolic Sine Chart for Estimating Working Stresses of Alloys at Elevated Temperatures,"* A. Nadai and P. G. McVetty, *1943 Preprint 42, American Society for Testing Materials*, 11 pp. Long-time creep tests as the basis for the comparison of existing and new alloys for high-temperature applications require a careful correlation of the test results. To reduce the time required for testing and for determining the creep properties of alloys, creep tests are conducted at stresses higher than those used in service. In this paper a method of plotting results of creep tests in a new manner is suggested which departs from the usual double logarithmic plots of stress and minimum creep rate. The method is based on the hyperbolic sine function for expressing the dependence of the rate of flow on the stress. The new chart is described and it is shown how easily it can be constructed from one single curve. Examples illustrate its application to a variety of materials to obtain estimates of stress for specified low creep rates.

Ingot Molds

CAST IRON. (*See Cast Iron.*)

Inspection

RADIOGRAPHY. *"X Marks the Spot,"* W. A. Montgomery, *Canada's Foundry Journal*, vol. 16, No. 7, July 1943, p. 19. X-rays were discovered by Roentgen a little less than a half century ago. Since that time knowledge of x-ray and its applications has increased until now it plays a vital part in medical science and many industries. Today radiographic inspection is made on all castings and welds that perform a vital structural function. The cost of radiographic equipment has been reduced to the point where nearly all foundries producing armament and pressure castings can afford to install it. Equipment has been developed to examine large numbers of small parts. Automatic means of processing films have been developed, not only greatly increasing the speed of processing, but also eliminating many defects resulting from careless handling. Chemists have improved emulsions used on radiographic film. High voltage machines have made it possible to radiograph increasingly heavy sections of metal, and portable x-ray units have facilitated the inspection of parts too big to be brought to the x-ray unit.

Magnesium

METALLOGRAPHIC TECHNIQUE. *"Metallographic Technique for Magnesium Alloys,"* F. A. Fox and H. T. Hall, *The Metal Industry (London)*, vol. 62, No. 25, June 18, 1943, pp. 391-392. The methods described in this articles are used by the laboratories of Magnesium Elektron Limited. Magnesium microspecimens are first cut with a coarse hack saw, being careful not to hold the piece so tightly in the vise as to cause twinning. Following this about 1/16 in. of metal is removed on a flat, bastard-cut file, thus removing metal strained by sawing. The specimen is then rubbed on increasingly fine grades of emery cloth and paper, changing the direction of stroke by 90° with each succeeding paper. After the last paper, the specimen is carefully washed with water to remove all emery particles. Polishing is done on three velveteen pads—one wet, one to which is added a little methylated spirits, and the last one dry. Etching may be either a "dip etch" or a "cover-glass etch." With the "cover-glass etch," one can observe the progress of etching through the microscope and stop the action when the specimen is correctly etched. The most used etchant is nital, although an oxalic acid etch is suitable for showing grain boundaries. In all cases it is important to prevent the formation of surface stains. Quick drying will lessen the tendency to stain. If etching is followed by a dip in hot alcohol, drying will be quite rapid. The preparation of micro-specimens is similar, except that the initial surface preparation may be done with the aid of machine tools to save time.

PROPERTIES. *"Behavior of Magnesium as a Structural Material," Product Engineering*, vol. 14, No. 7, July, 1943, pp. 430-435. Magnesium alloys have a high damping capacity. When a vibration of fixed amplitude is imposed upon a magnesium part by an external force, the high damping capacity of the magnesium rapidly reduce the amplitude of vibration. However, since the natural frequency of vibration depends upon the modulus of elasticity, it is lower in magnesium than in most metals, and during the increase from zero to operating speed, a magnesium member is almost certain to pass through a natural frequency, causing resonant vibration. Magnesium, in combination with dense metals, will dampen sound severely as it passes from a medium of high density to a medium of low density, or vice versa. Magnesium alloys reflect less sound than heavier, more rigid materials. Magnesium alloys exhibit three types of dimensional changes—growth, creep, and distortion. Distortion produced during fabrication may be straightened, either cold or hot. Magnesium alloys at high temperature soften, lose strength and gain ductility. Magnesium alloys at low temperatures gain in tensile and yield strength, and elongation decreases slightly. Magnesium alloys have a greater coefficient of thermal expansion than iron or steel. Thermal conductivity is good, and magnesium may be used in applications which take advantage of this property. Data on specific heat, thermal diffusivity, radiation, and latent heat of fusion are presented in tables. The presence of magnesium in a finely divided state creates a fire hazard. However, magnesium in large pieces conducts heat so readily that the temperature seldom reaches the ignition point. Pure magnesium has a conductivity of about 38 per cent of the International Annealed Copper Standard. Alloying elements lower its conductivity.

Malleable Iron

BASIC CUPOLA PRACTICE. (*See Cupola.*)

WARTIME DEVELOPMENTS. (*See Gray Iron.*)

Management

ABSENTEEISM. *"Competition Licks Absenteeism,"* Ben K. Price, *The Foundry*, vol. 71, No. 7, July, 1943, pp. 89, 176-

177. The author describes how the American Brake Shoe Co., at Portsmouth, Va., substantially reduced absenteeism by playing up the record of men who stayed on the job. The company dropped the usual methods of combating absenteeism —interviews, lectures, posters, appeals, and posted lists of offenders names—and replaced these with a competitive program in which teams with the best monthly attendance records enjoyed a dinner at which members from the losing teams supplied the waiter service. All took part in the dinner, regardless of what their record had been. This new program did away with the resentment developed in absentee offenders by the former unsuccessful attempts to improve their attendance.

Metallography

MAGNESIUM. *(See Magnesium.)*

Pattern Equipment

QUANTITY PRODUCTION. *"Pattern Equipment for Quantity Production of Small and Medium Castings,"* F. G. Butters, *Paper No. 754, Proceedings of the Institute of British Foundrymen,* vol. 35, 1941-1942. Paper presented at meeting of East Midlands Branch. The author traces the development of equipment now used for quantity casting production, starting with use of a flat roll over board for ramming a flat-back pattern and the next development of matches to support patterns with irregular contours during molding. He then discusses the various materials from which patterns are popularly constructed, giving the advantages of each material. Pattern plates, stripping plates, adaptor frames, patterns fitted with down runners, and deep drawing machines are also discussed.

Pig Iron

CHARCOAL. *(See Gray Iron.)*

Radiography

INSPECTION. *(See Inspection.)*

Safety and Hygiene

SAFETY SHOES. *"War Standards on Women's Safety Shoes,"* Major E. R. Granniss, *Industrial Standardization,* vol. 14, No. 7, July, 1943, pp. 211-212. Specifications for women's protective footwear have been published by the American Standards Association. These standards were adopted after consulting with manufacturers, industrial users, casualty insurance companies, and miscellaneous groups. Standard safety shoes for women include two types of safety-toe shoes (oxfords and high shoes); explosives-operations (non-sparking) shoes; and conductive shoes. Specifications cover not only construction of the shoes, but limit the styles as well.

Sand

RECLAMATION. *(See Cleaning.)*

Steel

BASIC CUPOLA PRACTICE. *(See Cupola.)*

CENTRIFUGAL CASTING. *"Pours Steel in Cores Spun Vertically,"* A. T. Baumer, *The Foundry,* vol. 71, No. 7, July, 1943, pp. 94-95, 177. Paper presented at annual meeting of Steel Founders' Society of America, Chicago, Feb. 10-11, 1943. Illustrated with a complete set of photographs of practices used in producing steel centrifugal castings in dry sand cores and spun vertically. Illustrations include cores of both the cluster type castings and castings revolved about their own axis, methods of assembling the cores, methods of mounting the cores in spinning machines, arrangement of the spinning machine drives, and pouring and shake-out operations.

DUCTILITY. *"Effect of Carbon on Alloy Steel Ductility,"* Malcolm F. Hawkes, *Iron Age,* vol. 152, No. 4, July 22, 1943, pp. 49-50. The author has searched the literature on steels for data which would show the effect of carbon content on ductility, and has constructed two charts on which reduction of area and elongation in 2 in. are plotted as functions of the carbon content. His studies indicate that no trouble in meeting ductility specifications should result from the substitution of a steel with a difference of 5 or 10 points carbon, unless a higher carbon steel is substituted for a steel which already has had a few ductility rejections. Reduction of area seems to be more sensitive to differences in carbon content than is elongation.

FOUNDRY PRACTICE. *"Steel Foundry Practice,"* D. O. Davis, *Canadian Metals and Metallurgical Industries,* vol. 6, No. 5, May, 1943, pp. 23-26. The author describes in detail the types of production, scheduling, sands and molds, preparation of molds, molding, floors, finishing and cleaning operations, heat treatment, straightening of castings, and inspection as performed in the Dominion Foundries & Steel, Ltd., Hamilton, Ont.

CREEP RESISTANCE. *"Structure and Creep Characteristics of Cast Carbon-Molybdenum Steel at 950°F.,"* H. E. Montgomery and John Urban, *1943 Preprint 28, American Society for Testing Material, 4 pp.* Interrupted quenching has been utilized to obtain pearlitic and acicular structures in both fine- and coarse-grained cast carbon-molybdenum steel. This eliminated the effect of grain size when comparing the creep-resisting properties of the different structures or *vice versa.* Creep tests have been made on specimens with these structures at a temperature of 950°F. and a load of 12,000 psi. for comparative purpose. The creep tests show that the coarse-grain acicular structure is the best in creep-resisting properties and the fine-grain pearlitic the poorest.

Testing

CREEP. *(See Steel, and High-Temperature Properties.)*

Tin Conservation

DE-GRADING. *(See Brass and Bronze.)*

Welding

ALUMINUM ALLOYS. *(See Aluminum.)*

Schedule of September Chapter Meetings

September 9

Northeastern Ohio
Cleveland Club, Cleveland
E. T. KINDT
Kindt-Collins Co.
"Timely Information Concerning the Pattern Industry"

✦

St. Louis
De Soto Hotel, St. Louis
PAT DWYER
The Foundry
"Gates and Risers"

✦ ✦

September 11

Michiana
Christiana Country Club
Elkhart, Ind.
ANNUAL OUTING

September 18

Central Indiana
Lake Shore Country Club,
Indianapolis
SEPTEMBER OUTING

✦ ✦

September 20

Quad City
Fort Armstrong Hotel,
Rock Island, Ill.
H. W. DIETERT
Harry W. Dietert Co.
"High Temperature Testing of Sand"

✦ ✦

September 24

Ontario
Royal Connaught Hotel,
Hamilton, Ont.
B. A. TRESTRAIL
John Inglis Co., Ltd.
"Industrial Relations"

Chesapeake
Engineers Club, Baltimore, Md.
L. C. WILSON
Reading Steel Casting Div.
American Chain & Cable Co., Inc.

✦ ✦

September 28

Toledo
Hillcrest Hotel
CAST IRON AND MALLEABLE NIGHT

✦ ✦

October Meetings

October 4

Central Indiana
Washington Hotel, Indianapolis
DR. JAMES T. MACKINZIE
American Cast Iron Pipe Co.
"Cupola Operations"

✦ ✦

October 8

Philadelphia
"Future of Magnesium"

Your Bond Selling Responsibilities Double!

Starting September 9th, your Government will conduct the greatest drive for dollars from individuals in the history of the world—the 3rd War Loan.

This money, to finance the invasion phase of the war, must come in large part from individuals on payrolls.

Right here's where YOUR bond selling responsibilities DOUBLE!

For this extra money must be raised *in addition* to keeping the already established Pay Roll Allotment Plan steadily climbing. At the same time, every individual on Pay Roll Allotment must be urged to dig deep into his pocket to buy *extra* bonds, in order to play his full part in the 3rd War Loan.

Your now *doubled duties* call for these two steps:

1. If you are in charge of your Pay Roll Plan, check up on it at once—or see that whoever is in charge, does so. See that it is hitting on all cylinders—*and keep it climbing!* Sharply increased Pay Roll percentages are the best warranty of sufficient post war purchasing power to keep the nation's plants (*and yours*) busy.

2. In the 3rd War Loan, every individual on the Pay Roll Plan will be asked to put an *extra two weeks salary* into War Bonds—over and above his regular allotment. Appoint yourself as one of the salesmen—and see that this sales force has every opportunity to do a real selling job. The sale of these *extra* bonds cuts the inflationary gap and builds added post-war purchasing power.

Financing this war is a tremendous task—but 130,000,000 Americans are going to see it through 100%! This is their own best *individual* opportunity to share in winning the war. The more frequently and more intelligently this sales story is told, the better the average citizen can be made to understand the wisdom of turning every available loose dollar into the finest and safest investment in the world—United States War Bonds.

★ ★ ★

BACK THE ATTACK With War Bonds!